ORDER NO.SIMMC 0301010A2

Service Manual

Microwave Oven

Simplified

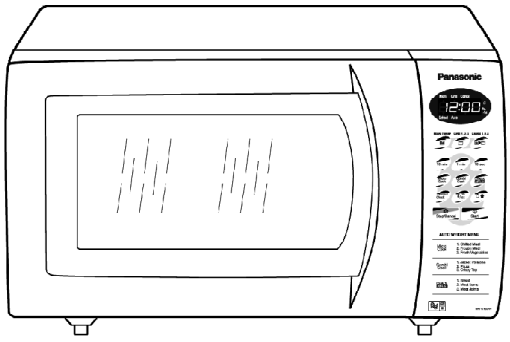
NN-K153WF / NN-K103WF / NN-K123MF

BPQ(U.K.)

EPG(Germany, France, Italy, Finland, Spain, Portugal, Greece, Poland, Holland)

WPG(Switzerland)

Please file and use this specified manual together with the service manual for Model NN-K152WF/NN-K102WF(ORDER NO. SIMMC0203001C2).



SPECIFICATIONS

Specification

Model		NN-K153WF	NN-K123MF	NN-K103WF
Power Source:		230V AC Single Phase, 50Hz _ _ _ _ _ _ _ _ . For EPG, WPG Models 230V~240V AC Single Phase,50Hz _ _ _ _ For BPQ Models		
Power Requirement:	Microwave	1250W	1250W	1250W
	Heater	1130W	1130W	1130W
Output:	Microwave(IEC60705)	800W	800W	800W
	Heater	1100W	1100W	1100W
Microwave Frequency:		2450MHz		
Timer:		99min.90sec	99min.90sec	35min
Outside Dimensions:		357mm(W) x 484mm(D) x 282mm(H)		
Oven Cavity Dimensions:		330mm(W) x 325mm(D) x 191mm(H)		
Weight:		13.6kg		
PbF		This product with PbF		
Output power:IEC60705 Test Procedure				
Specifications subject to change without notice.				

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

WARNING

1. This product should be serviced only by trained, qualified personnel.
2. Check for radiation leakage before and after every servicing according to the "procedure for measuring radiation leakage."
3. If the unit cannot be repaired on site, advise the customer not to use until unit is repaired.
4. There are special components used in the microwave oven which are important for safety. These parts are marked with a ⚠ on the replacement parts list. It is essential that these critical parts be replaced only with the manufacture's specified parts to prevent microwave leakage, shock, fire, or other hazards. Do not modify the orginal design.

This service manual covers products for following markets.
When troubleshooting or replacing parts, please refer to the country identifications shown below for your applicable product specification.

BPQ	For U.K.
EPG	For Germany, France, Italy, Finland, Spain Portugal, Greece, Poland, Holland
WPG	For Switzerland

CAUTION

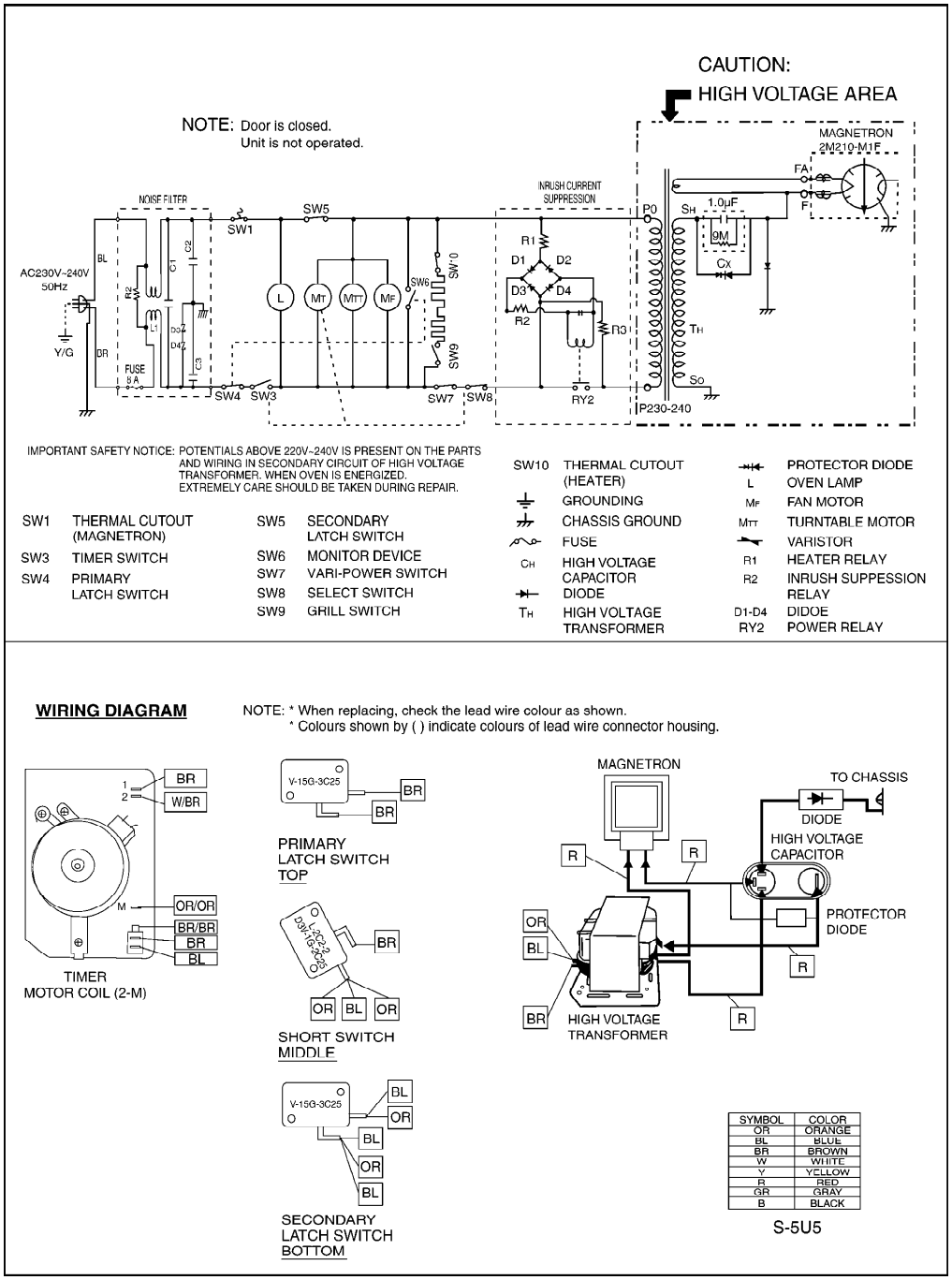
About lead free solder (PbF)

Distinction of PbF PCB: PCBs (manufactured) using lead free solder will have a PbF stamp on the PCB.

Caution:
- Pb free solder has a higher melting point than standard solder; Typically the melting point is 30 - 40˚C higher. Please use a high temperature soldering iron. In case of the soldering iron with temperature control, please set it to 370 ± 10˚C.
- Pb free solder will tend to splash when heated too high (about 600˚C).

Panasonic

1. SCHEMATIC DIAGRAM (NN-K103WF)



IMPORTANT SAFETY NOTICE: POTENTIALS ABOVE 220V-240V IS PRESENT ON THE PARTS AND WIRING IN SECONDARY CIRCUIT OF HIGH VOLTAGE TRANSFORMER. WHEN OVEN IS ENERGIZED. EXTREMELY CARE SHOULD BE TAKEN DURING REPAIR.

SW1	THERMAL CUTOUT (MAGNETRON)	SW5	SECONDARY LATCH SWITCH	SW10	THERMAL CUTOUT (HEATER)		PROTECTOR DIODE
SW3	TIMER SWITCH	SW6	MONITOR DEVICE		GROUNDING	L	OVEN LAMP
SW4	PRIMARY LATCH SWITCH	SW7	VARI-POWER SWITCH		CHASSIS GROUND	MF	FAN MOTOR
		SW8	SELECT SWITCH		FUSE	MTT	TURNTABLE MOTOR
		SW9	GRILL SWITCH	CH	HIGH VOLTAGE CAPACITOR		VARISTOR
					DIODE	R1	HEATER RELAY
				TH	HIGH VOLTAGE TRANSFORMER	R2	INRUSH SUPPESSION RELAY
						D1-D4	DIDOE
						RY2	POWER RELAY

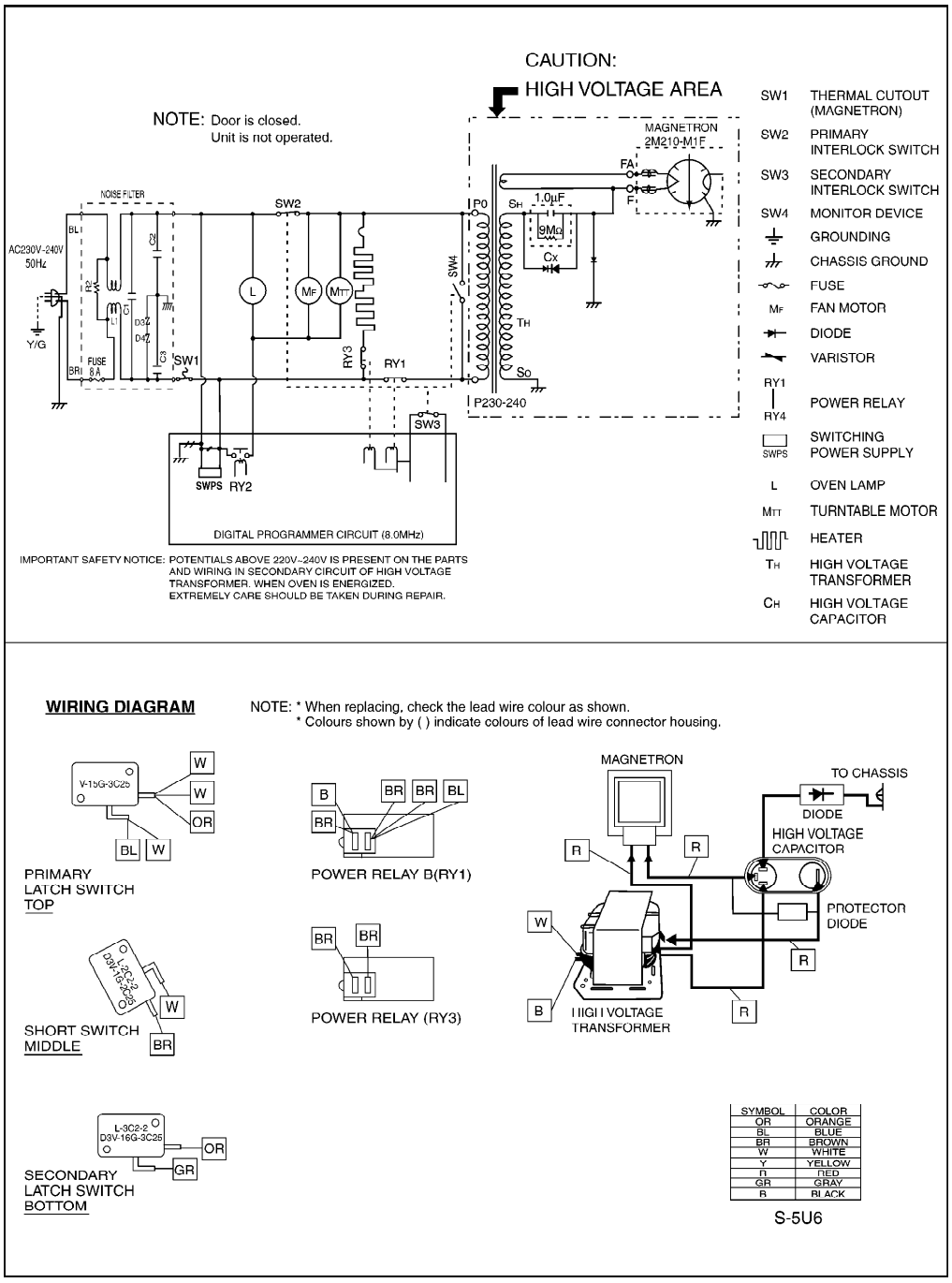
WIRING DIAGRAM

NOTE: * When replacing, check the lead wire colour as shown.
* Colours shown by ( ) indicate colours of lead wire connector housing.

SYMBOL	COLOR
OR	ORANGE
BL	BLUE
BR	BROWN
W	WHITE
Y	YELLOW
R	RED
GR	GRAY
B	BLACK

S-5U5

2. SCHEMATIC DIAGRAM (NN-K153WF, NN-K123MF)



3. CAUTIONS TO BE OBSERVED WHEN TROUBLESHOOTING

Unlike many other appliances, the microwave oven is high-voltage, high-current equipment. Though it is free from danger in ordinary use, extreme care should be taken during repair.

CAUTION
Servicemen should remove their watches whenever working close to or replacing the magnetron.

3.1. Check the grounding

Do not operate on a 2-wire extension cord. The microwave oven is designed to be used when grounded. It is imperative, therefore, to make sure it is grounded properly before beginning repair work.

3.2. Warning about the electric charge in the high voltage capacitor

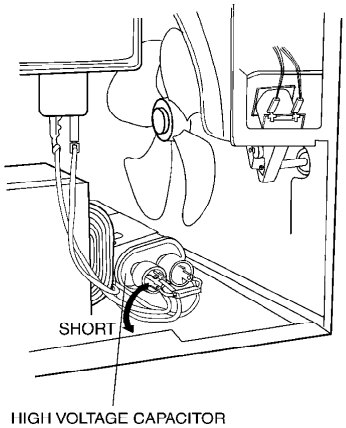
For about 30 seconds after the oven is turned off, an electric charge remains in the high voltage capacitor.When replacing or checking parts, remove the power plug from the outlet and short the terminal of the high voltage capacitor (terminal of lead wire from diode) to chassis ground with an insulated handle screwdriver to discharge.

WARNING

There is high-voltage present, with high-current capabilities in the circuits of the high voltage winding and filament winding of the high voltage transformer. It is extremely dangerous to work on or near these circuits with oven energized. / DO NOT measure the voltage in the high voltage circuit including filament voltage of magnetron.

WARNING

Never touch any circuit wiring with your hand nor with an insulated tool during operation.



Touch chassis side first then short to the high voltage capacitor terminal.

3.3. When parts must be replaced, remove the power plug from the outlet.

3.4. When the 8 Amp fuse is blown due to the operation of short switch:

WARNING

When the 8 Amp fuse is blown due to the operation of short switch, you must replace Primary latch switch and short switch. Also replace power relay B (RY1) when the continulty check reads shorted contacts(1-2).

1. **This is mandatory. Refer to “Adjustments and Measurement” for these switches.**
2. **When replacing the fuse, confirm that it has the appropriate rating for these models.**
3. **When replacing faulty switches, be sure mounting tabs are not bent, broken or otherwise deficient in their ability to hold the switches.**

3.5. Avoid inserting nails, wire, etc. through any holes in the unit during operation.

Never insert a wire, nail or any other metal object through the lamp holes on the cavity or any other holes or gaps, because such objects may work as an antenna and cause microwave leakage.

3.6. Confirm after repair

1. **After repair or replacement of parts, make sure that the screws of the oven, etc. are neither loose nor missing. / Microwaves might leak if screws are not properly tightened.**
2. **Make sure that all electrical connections are tight before inserting the plug into the wall outlet.**
3. **Check for microwave energy leakage.**

CAUTION / MICROWAVE RADIATION

DO NOT BECOME EXPOSED TO RADIATION FROM THE MICROWAVE GENERATOR OR OTHER PARTS CONDUCTING MICROWAVE ENERGY.

IMPORTANT NOTICE

1.The following components have potentials above 2000V while the appliance is operated.

*** Magnetron**

*** High voltage transformer**

*** High voltage diode**

*** High voltage capacitor**

Pay special attention on these portions.

2.When the appliance is operated with the door hinge or magnetron fixed incorrectly, the microwave leakage can reach more than 5mW/cm2. After repair or exchange, it is very important to check if magnetron and the door hinge is correctly fixed.

3.7. Sharp edges

CAUTION

Please use caution when unpacking, installing or moving the unit, as some exposed edges may be sharp to touch and cause injury if not handled with care.

4. MEASUREMENTS AND ADJUSTMENTS

4.1. Adjustment of primary latch switch, secondary latch switch and short switch.

1. **When mounting Primary latch switch,Secondary latch switch and short switch to door hook assembly, mount the Primary latch swith, the Secondary latch switch and the short switch to the door hook assembly as shown in table.**

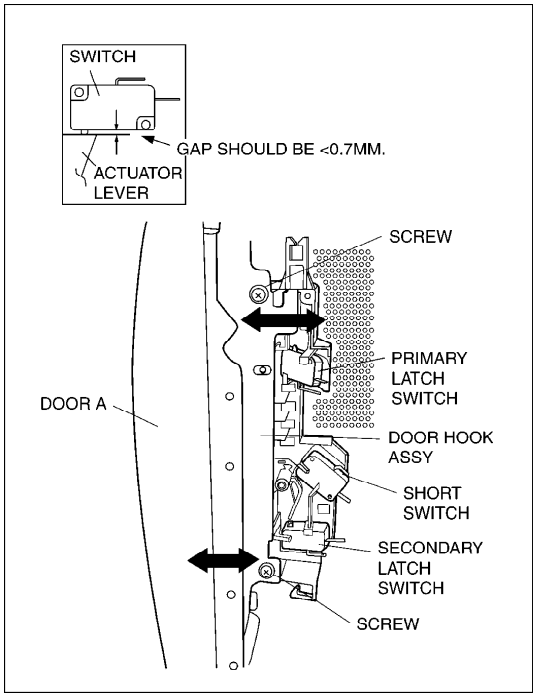
   NOTE:

   No specific adjustment during installation of Primary latch switch,Secondary latch switch and short switch to the door hook is necessary.

2. **When mounting the door hook assembly to the oven assembly, adjust the door hook assembly by moving it in the direction of arrow in the illustration so that the oven door will not have any play in it. Check for play in the door by pulling the door assembly. Make sure that the latch keys move smoothly after adjustment is**

completed. Completely tighten the screws holding the door hook assembly to the oven assembly.

3. Reconnect the short switch and check the coninuity of the monitor circuit and all latch switches again by following the components test procedures.



4.2. Measurement of microwave output

The output power of the magnetron can be determined by performing IEC standard test procedures. However, due to the complexity of IEC test procedures, it is recommended to test the magnetron using the simple method outlined below.

Necessary Equipment:

- 1 liter beaker
- Glass thermometer
- Wrist watch or stopwatch

NOTE:

Check the line voltage under load.Low voltage will lower the magnetron output. Take the temperature readings and heating time as accurately as possible.

1. Fill the beaker with exactly one liter of tap water. Stir the water using the thermometer and record the beaker's temperature. (recorded as T1).
2. Place the beaker on the center of glass cook plate. / Set the oven

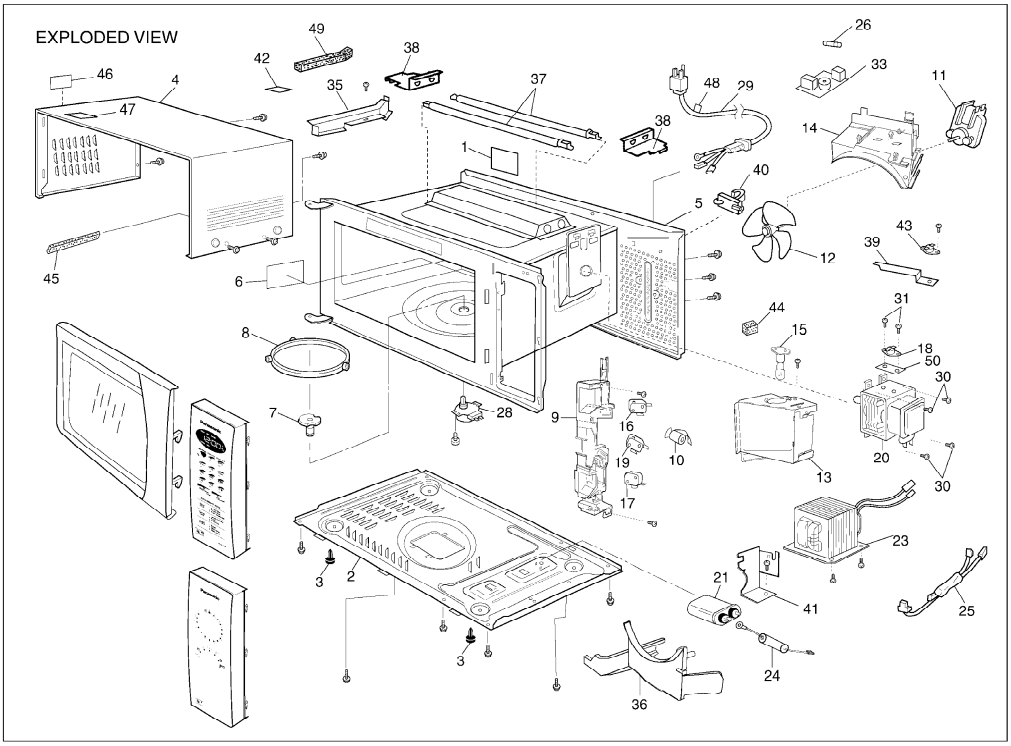
for High power and heat it for exactly one minute.

3. **Stir the water again and read the temperature of the beaker. (recorded as T2).**
4. **The normal temperature rise at High power position for each model is as shown in table.**

TABLE (1L-1min.test)

RATED OUTPUT	TEMPERATURE RISE
800W(IEC60705)	Min. 8°C

5. EXPLODED VIEW AND PARTS LIST



6. PARTS LIST

NOTE:

1. **When ordering replacement part(s), please use part number(s) shown in this part list.**
   Do not use description of the part.
2. **Important safety notice:**
   Components identified by mark have special characteristics important for safety.
   When replacing any of these components, use only manufacture's

specified parts.

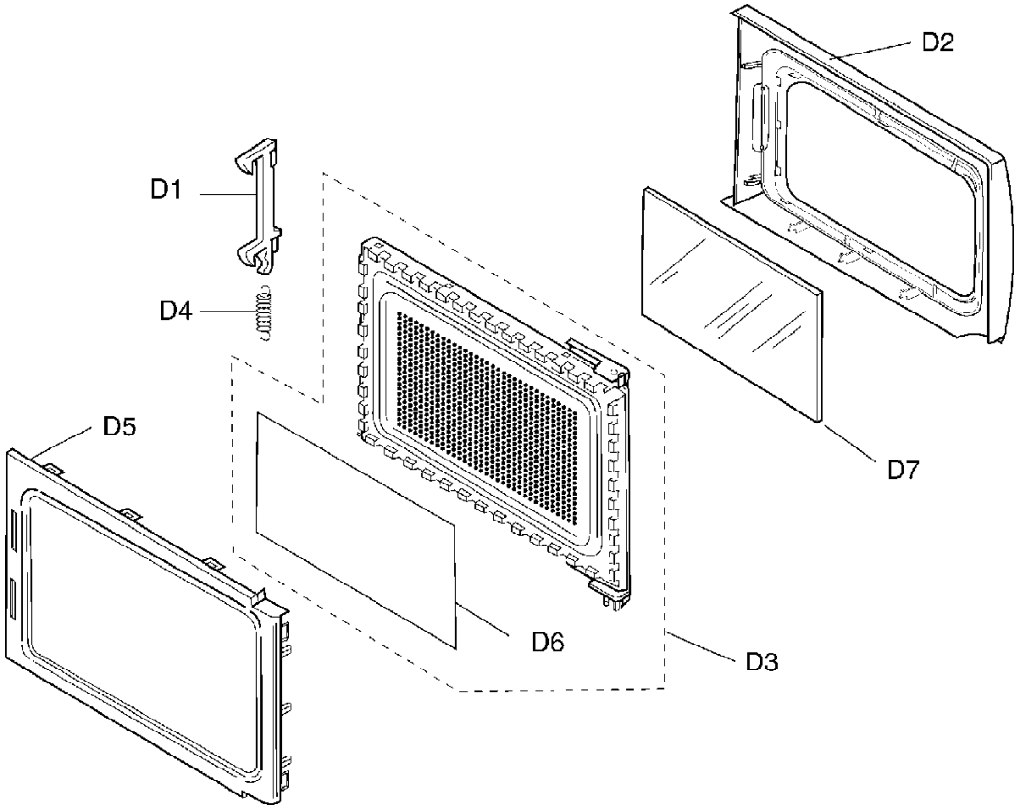
NOTE:

Please order all parts from MELUK in U.K.

Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
1		F00064080BP	CAUTION LABEL	1	BPQ
1		F00069000EP	CAUTION LABEL	1	EPG, WPG
2		F10015G50XN	BASE	1	
3		F10084T00AP	RUBBER FOOT	2	
4		F110D5U50HBP	CABINET BODY	1	K153WF, K103WF
4		F110D5G60SXN	CABINET BODY	1	K123MF
5	⚠	F200A5G50XN	OVEN	1	
6		F20555G10XN	COVER	1	
7		F21315G10XN	PULLY SHAFT	1	
8		F290D5G10XN	ROLLER RING (U)	1	
9	⚠	F30205G10XN	DOOR HOOK	1	
10		F31365G10XN	HOOK LEVER A	1	
11		F400A5U00XN	FAN MOTOR	1	
12		F40085G50XN	FAN BLADE	1	
13		F40255G10XN	AIR GUIDE A	1	
14		F41445G40XN	ORIFICE	1	
15		F612E5G10XN	INCANDESCENT LAMP (U)	1	25W, 240V
16	⚠	F61425U30XN	MICRO SWITCH	1	(PRIMARY LATCH SWITCH)
17	⚠	F61425U30XN	MICRO SWITCH	1	K103WF (SECONDARY LATCH SWITCH)
17	⚠	F61415U30XN	MICRO SWITCH	1	K153WF, K123MF (SECONDARY LATCH SWITCH)
18	⚠	F61454J50XN	THERMAL CUTOUT	1	K103WF (185°C OFF)
19	⚠	F61785U30XN	MICRO SWITCH	1	(SHORT SWITCH)
20	⚠	2M210-M1G	MAGNETRON	1	
21	⚠	F60905G10XN	H.V.CAPACITOR	1	1.0 μ F, 2100V
23	⚠	F621B5G10MN	H.V.TRANSFORMER	1	
24	⚠	F62025G10XN	DIODE	1	
25	⚠	F606V5G10XN	PROTECTOR DIODE (U)	1	
26	⚠	ANE6230Z70BP	FUSE	1	8A, 250V
28		F63265U30XN	TURNTABLE MOTOR	1	
29	⚠	F900C5G50BP	AC CORD W/PLUG	1	BPQ
29	⚠	F900C5G40ZP	AC CORD W/PLUG	1	EPG
29	⚠	F900C5G60WP	AC CORD W/PLUG	1	WPG
30		XTWFA4+12T	SCREW	4	FOR MAGNETRON
31		XTEFA3+6B	SCREW	2	FOR THERMAL CUTOUT
33		F692Y5G10QP	NOISE FILTER (U)	1	
35		F40268920XN	AIR GUIDE B	1	
36		F40305G50XN	AIR GUIDE D	1	
37		F630G5G50BP	HEATER (AU)	2	120V, 550W
38		F64605G50XN	HEATER MOUNTING PLATE	2	
39		F66265G60XN	THERMAL CUTOUT MOUNTING	1	K153WF, K123MF
39		F66265G50XN	THERMAL CUTOUT MOUNTING	1	K103WF
40		F11407000AP	STOPPER	1	

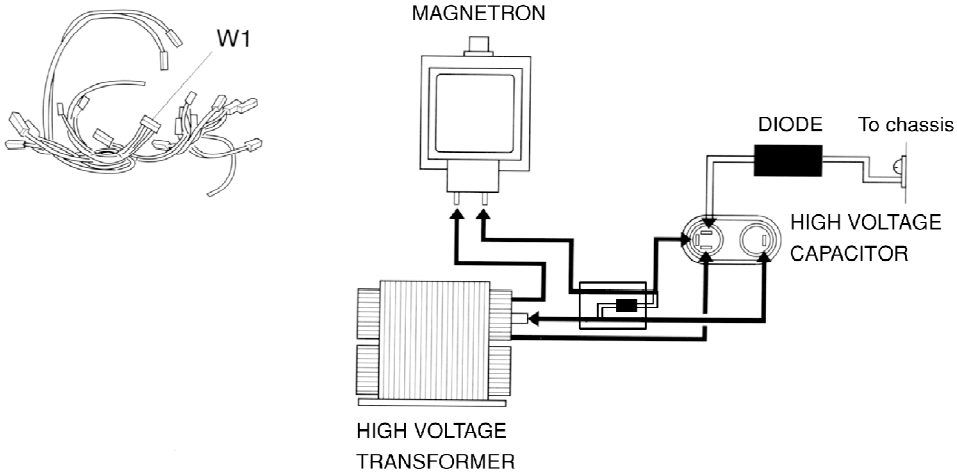
Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
41		F66625G50XN	GROUNDING PLATE	1	
42		F01504Y00XN	NO TOUCHING LABEL	1	EPG, WPG
43	⚠	F61455G60XN	THERMAL CUTOUT	1	K153WF, K123MF (150°C OFF)
43	⚠	F61455G50XN	THERMAL CUTOUT	1	K103WF (67°C ON, 77°C OFF)
44		F0922000AE	CUSHION RUBBER C	1	
45		F0922000EF	CUSHION RUBBER C	1	
46		F04905U60HEP	ENERGY LABEL	1	K153WF EPG
46		F04905U60SEP	ENERGY LABEL	1	K123MF EPG
46		F04905U50HEP	ENERGY LABEL	1	K103WF EPG
47		F01505G50BP	NO TOUCHING LABEL	1	BPQ
48		F02395G50BP	AC CORD CAUTION LABEL	1	BPQ
49		F0923000AL	CUSHION RUBBER C	1	
50		F62385G50XN	SPACER	1	K103WF

7. DOOR ASSEMBLY



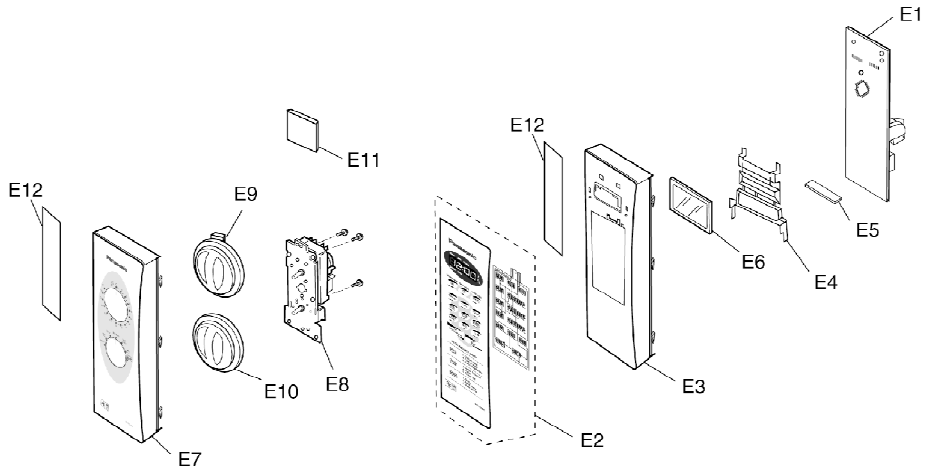
Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
D1		F30185G10XN	DOOR KEY A	1	
D2	⚠	F30015U40HXN	DOOR A	1	K153WF, K103WF
D2	⚠	F30015U60SBP	DOOR A	1	K123MF
D3	⚠	F302K5G10XN	DOOR E (U)	1	
D4		F30215G10XN	DOOR KEY SPRING	1	
D5	⚠	F30855G10XN	DOOR C	1	
D6	⚠	F31455G10XN	DOOR SCREEN A	1	
D7		F31465U30XN	DOOR SCREEN B	1	

8. WIRING MATERIALS



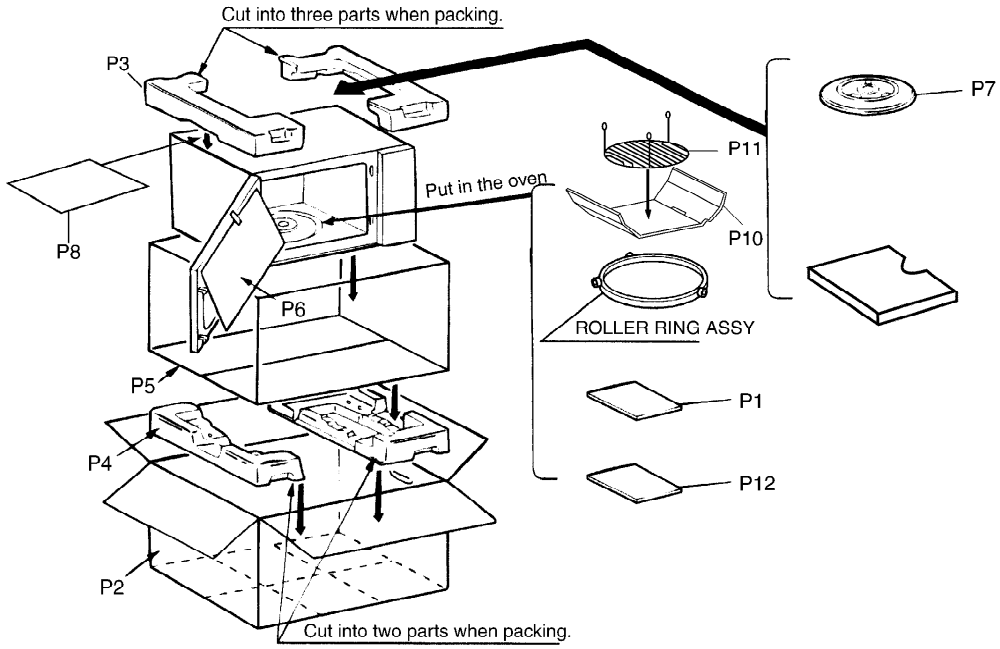
Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
W1		F030A5G60BP	LEAD WIRE HARNESS	1	K153WF, K123MF
W1		F030A5U50BP	LEAD WIRE HARNESS	1	K103WF

9. ESCUTCHEON BASE ASSEMBLY



Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
E1		F603L5G60BP	D.P.CIRCUIT	1	K153WF (BPQ), K123MF (BPQ)
E1		F603L5G60EP	D.P.CIRCUIT	1	K153WF (EPG, WPG), K123MF (EPG, WPG)
E2		F630Y5U60HBP	MEMBRANE SWITCH (U)	1	K153WF (BPQ)
E2		F630Y5U60HEP	MEMBRANE SWITCH (U)	1	K153WF (EPG, WPG)
E2		F630Y5U60SBP	MEMBRANE SWITCH (U)	1	K123MF (BPQ)
E2		F630Y5U60SEP	MEMBRANE SWITCH (U)	1	K123MF (EPG, WPG)
E3		F80345U40HXN	ESCUTCHEON BASE	1	K153WF
E3		F80345U60SBP	ESCUTCHEON BASE	1	K123MF
E4		F66174T00AP	DISPLAY TUBE COVER	1	K153WF, K123MF
E5		A67004T00AP	RUBBER CONNECTOR	1	K153WF, K123MF
E6		AEDDHJ5G60XN	DISPLAY	1	K153WF, K123MF
E7		F80345U50HBP	ESCUTCHEON BASE	1	K103WF (BPQ)
E7		F80345U50HEP	ESCUTCHEON BASE	1	K103WF (EPG)
E8		F60015U50BP	TIMER	1	K103WF
E9		F80205U30HXN	TIMER KNOB	1	K103WF
E10		F80205V00HXN	TIMER KNOB	1	K103WF
E11		F603L5G50EP	INRUSH CURRENT SUPPRESSION	1	K103WF
E12		F00075U60HBP	NAME PLATE	1	K153WF (BPQ)
E12		F00075U60HEP	NAME PLATE	1	K153WF (EPG)
E12		F00075U60HWP	NAME PLATE	1	K153WF (WPG)
E12		F00075U60SBP	NAME PLATE	1	K123MF (BPQ)
E12		F00075U60SEP	NAME PLATE	1	K123MF (EPG)
E12		F00075U60SWP	NAME PLATE	1	K123MF (WPG)
E12		F00075U50HBP	NAME PLATE	1	K103WF (BPQ)
E12		F00075U50HEP	NAME PLATE	1	K103WF (EPG)

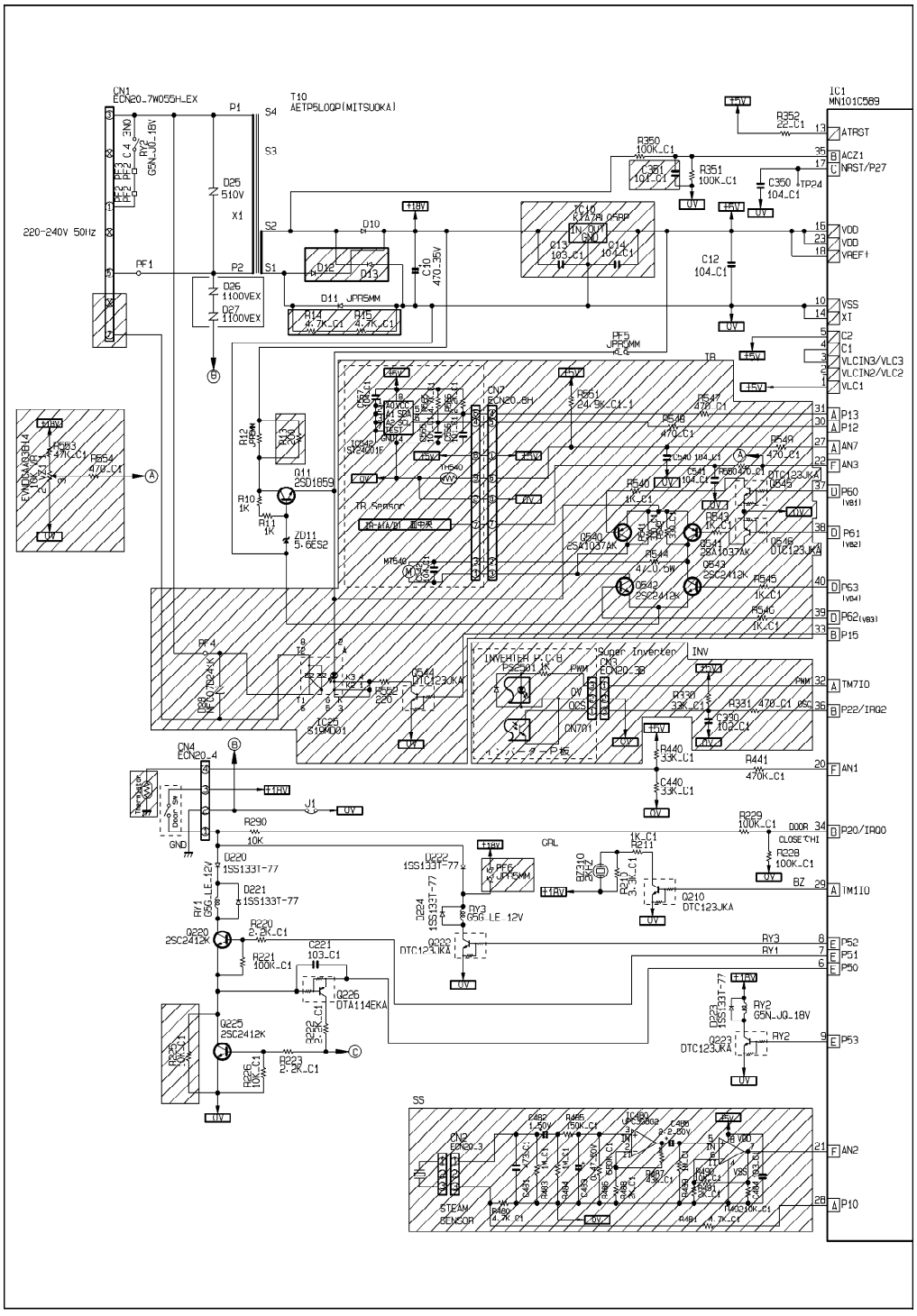
10. PACKING AND ACCESORIES

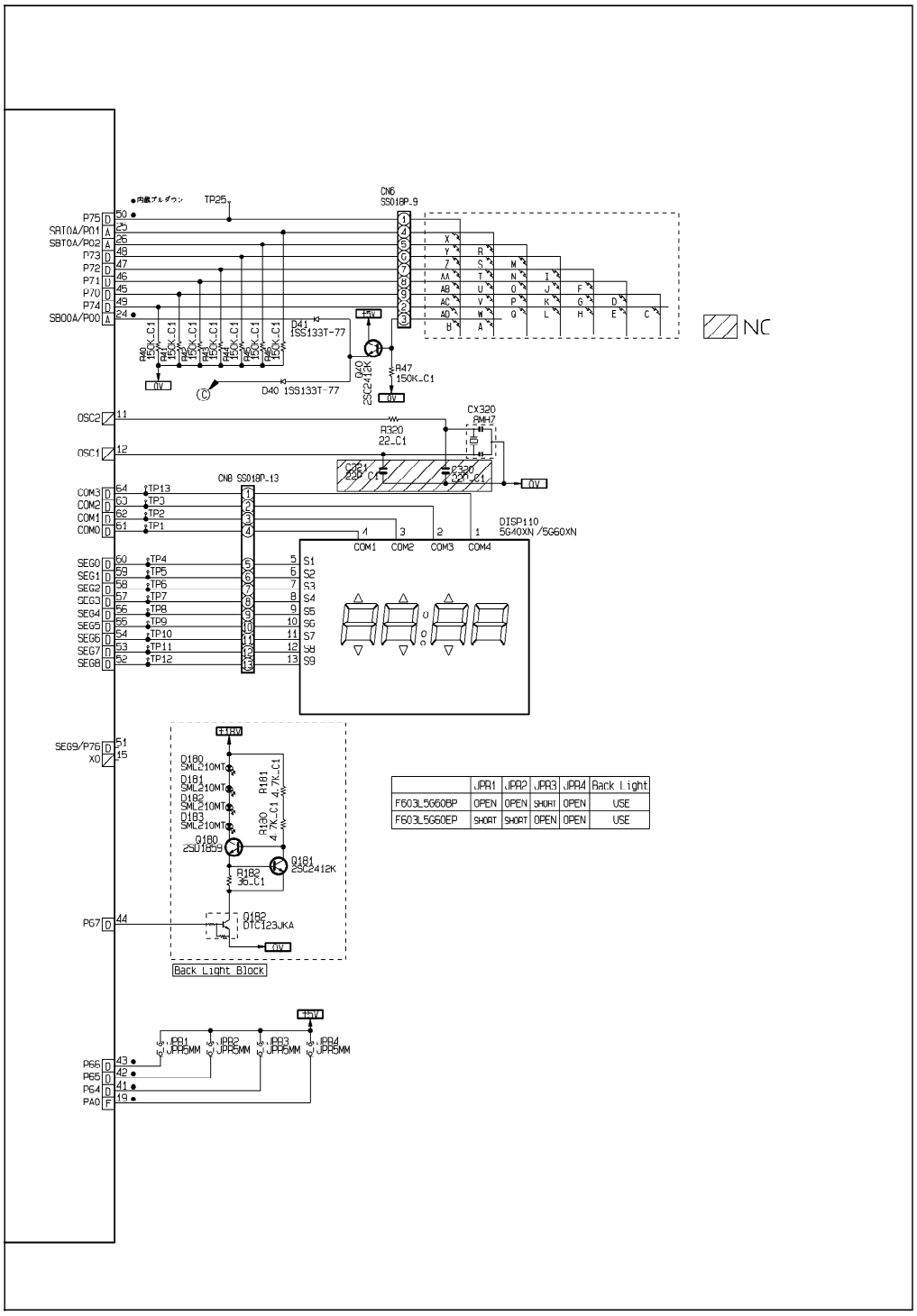


Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
P1		F00035U50BP	INSTRUCTION MANUAL	1	K153WF (BPQ), K123MF (BPQ), K103WF (BPQ)
P1		F00035U50EP	INSTRUCTION MANUAL	1	K153WF (EPG), K123MF (EPG), K103WF (EPG)
P1		F00035U60WP	INSTRUCTION MANUAL	1	K153WF (WPG), K123MF (WPG)
P2		F01025U60HBP	PACKING CASE, PAPER	1	K153WF
P2		F01025U60SBP	PACKING CASE, PAPER	1	K123MF
P2		F01025U50HBP	PACKING CASE, PAPER	1	K103WF
P3		F01045G10XN	UPPER FILLER	1	
P4		F01055G10XN	LOWER FILLER	1	
P5		F01065M00BP	P.E.BAG	1	
P6		F01075G10XN	DOOR SHEET	1	
P7		A06015G10XN	COOKING TRAY	1	
P8		F01924T00AP	SHEET	1	
P10		F01085G50XN	TRAY PACKING	1	
P11		F060V5G50XN	OVEN RACK	1	
P12		F01695M70BP	SERVICE CENTER LIST	1	

11. DIGITAL PROGRAMMER CIRCUIT(NN-153WF/ K123MF)

SCHEMATIC DIAGRAM





	JPR1	JPR2	JPR3	JPR4	Back Light
F603L5G60BP	OPEN	OPEN	SHORT	OPEN	USE
F603L5G60EP	SHORT	SHORT	OPEN	OPEN	USE

12. DIGITAL PROGRAMMER CIRCUIT (NN-K153WF/ K123MF)

PARTS LIST

Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
BZ310		AEFBTFM571	BUZZER	1	2.0KHz
C10		AECETK1V471B	AL CHEM CAPACITOR	1	470 μ F/35V
C221		AECUU06F103Z	CHIP CAPACITOR	1	0.01 μ F/50V
C12, C350		AECUT06F104Z	CHIP CAPACITOR	2	0.1 μ F/25V
CN1		AEEMXH01505W	CONNECTOR	1	
CN4		F03535G40XN	CONNECTOR	1	4 PIN
CX320		AEFOS800MG06	CERAMIC RESONATOR	1	8.00MHz
D10		AESSRCT1A6-E	DIODE	1	
D40, D41, D220, D221, D222, D223, D224		AESS133T-77	DIODE	7	
D180, D181, D182, D183		AESQPY1112H	LED	4	
D25		AERZ511KD10A	VARISTOR	1	
D26, D27		AERZ102KD10A	VARISTOR	2	
IC1		MN101C589DM	L.S.I	1	
Q11, Q180		2SD1859TV2Q	TRANSISTOR	2	
Q40, Q181, Q220, Q225		2SC2412KT146	CHIP TRANSISTOR	4	
Q182, Q210, Q222, Q223		AESC23JKE	CHIP DIGI-TRANSISTOR	4	
Q226		AESA14EKE	CHIP DIGI-TRANSISTOR	1	
R211		AERJ06J102R	CHIP RESISTOR	1	1K Ω, 1/16W, 5%
R226		AERJ06J103R	CHIP RESISTOR	1	10K Ω, 1/16W, 5%
R221, R228, R229, R350, R351		AERJ06J104R	CHIP RESISTOR	5	100K Ω, 1/16W, 5%
R40, R41, R42, R43, R44, R45, R46, R47		AERJ06J154R	CHIP RESISTOR	8	150K Ω, 1/16W, 5%
R320, R352		AERJ06J220R	CHIP RESISTOR	2	22 Ω, 1/16W, 5%
R220, R222, R223		AERJ06J222R	CHIP RESISTOR	3	2.2K Ω, 1/16W, 5%
R210		AERJ06J332R	CHIP RESISTOR	1	3.3K Ω, 1/16W, 5%
R440, C440		AERJ06J333R	CHIP RESISTOR	2	33K Ω, 1/16W, 5%
R182		AERJ06J360R	CHIP RESISTOR	2	36 Ω, 1/16W, 5%
R441		AERJ06J471R	CHIP RESISTOR	1	470 Ω, 1/16W, 5%
R180, R181		AERJ06J472R	CHIP RESISTOR	2	4.7K Ω, 1/16W, 6%
R10, R11		AERDY2TJ102T	CARBON FILM RESISTOR	2	1K Ω, 1/4W, 5%
R290		AERDY2TJ103T	CARBON FILM RESISTOR	1	10K Ω, 1/4W, 5%
RY1, RY3		AEGG5G1A12	POWER RELAY	2	
RY2		AEBJQ1A18	POWER RELAY	1	
T10		AETP4T00QP	LOW VOLTAGE TRANSFORMER	1	
ZD11		AESZMTZJ5R6B	ZENER DIODE	1	

01/03 / S-5U5 / S-5U6 / Printed in China

ORDER NO.SIMMC 0203001C2

Service Manual

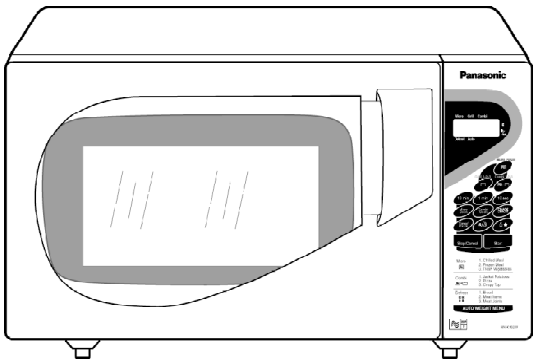
Microwave Oven

NN-K152WF / NN-K102WF

BPQ(U.K.)

EPG(Germany, France, Italy, Finland, Spain, Portugal, Greece, Poland, Holland)

WPG(Switzerland)



SPECIFICATIONS

Specification

Model		NN-K152WF	NN-K102WF
Power Source:		230V AC Single Phase, 50Hz _ _ _ _ _ _ _ _ . For EPG, WPG Models 230V~240V AC Single Phase,50Hz _ _ _ _ For BPQ Models	
Power Requirement:	Microwave	1250W	1250W
	Heater	1130W	1130W
Output:	Microwave(IEC705)	800W	800W
	Heater	1100W	1100W
Microwave Frequency:		2450MHz	
Timer:		99min.90sec	35min
Outside Dimensions:		357mm(W) x 484mm(D) x 282mm(H)	
Oven Cavity Dimensions:		330mm(W) x 325mm(D) x 191mm(H)	
Weight:		14kg	
PbF		This product with PbF	
Output power:IEC705-88 Test Procedure			
Specifications subject to change without notice.			

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law.

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

WARNING

1. This product should be serviced only by trained, qualified personnel.
2. Check for radiation leakage before and after every servicing according to the "procedure for measuring radiation leakage."
3. If the unit cannot be repaired on site, advise the customer not to use until unit is repaired.
4. There are special components used in the microwave oven which are important for safety. These parts are marked with a ⚠ on the replacement parts list. It is essential that these critical parts be replaced only with the manufacture's specified parts to prevent microwave leakage, shock, fire, or other hazards. Do not modify the orginal design.

This service manual covers products for following markets.
When troubleshooting or replacing parts, please refer to the country identifications shown below for your applicable product specification.

BPQ	For U.K.
EPG	For Germany, France, Italy, Finland, Spain Portugal, Greece, Poland, Holland
WPG	For Switzerland

CAUTION

About lead free solder (PbF)

Distinction of PbF PCB: PCBs (manufactured) using lead free solder will have a PbF stamp on the PCB.

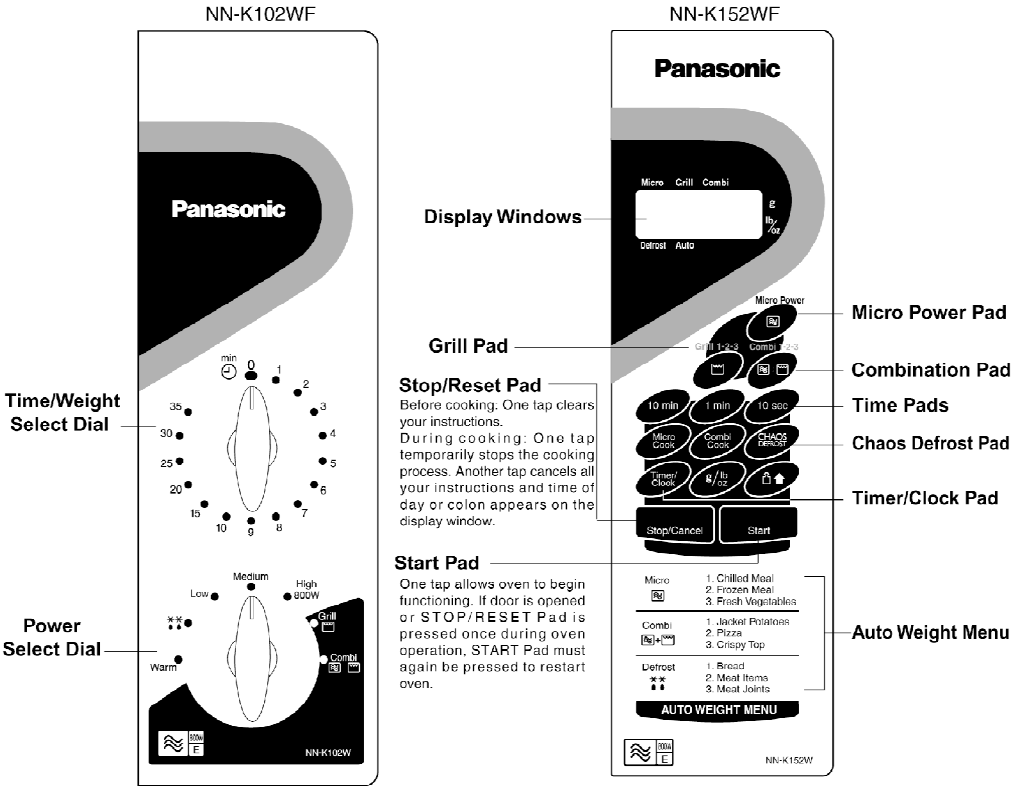
Caution:
- Pb free solder has a higher melting point than standard solder; Typically the melting point is 30 - 40˚C higher. Please use a high temperature soldering iron. In case of the soldering iron with temperature control, please set it to 370 ± 10˚C.
- Pb free solder will tend to splash when heated too high (about 600˚C).

Panasonic®

1. FEATURE CHART

MODEL / FEATURE	NN-K102WF	NN-K152W
Three Stage Cooking	-	O
Chaos Defrost	-	O
Auto Cook	-	O
Grill	O	O
Combination	O	O
Digital Clock	-	O
Child Safety Lock	-	O
Timer	O	-
Variable Power Control	O	-

2. CONTROL PANEL


NN-K102WF
NN-K152WF
Panasonic
Time/Weight Select Dial
Power Select Dial
Display Windows
Grill Pad
Stop/Reset Pad
Before cooking: One tap clears your instructions.
During cooking: One tap temporarily stops the cooking process. Another tap cancels all your instructions and time of day or colon appears on the display window.
Start Pad
One tap allows oven to begin functioning. If door is opened or STOP/RESET Pad is pressed once during oven operation, START Pad must again be pressed to restart oven.
Micro Power Pad
Combination Pad
Time Pads
Chaos Defrost Pad
Timer/Clock Pad
Auto Weight Menu
AUTO WEIGHT MENU
NN-K102W
NN-K152W

Pull Door Handle:
Pull to open the door. Opening the door during cooking will stop the cooking process without cancelling the program. Cooking resumes as soon as the door is closed. The oven light will turn on and stay on whenever the door is opened. It is quite safe to open the door at any time during a cooking program and there is no risk of microwave exposure.

3. OPERATION AND DIGITAL PROGRAMMER

CIRCUIT TEST PROCEDURE

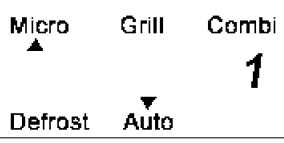
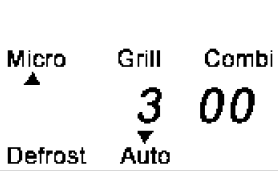
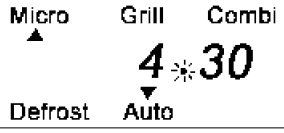
3.1. To set clock

OPERATION	SCROLL DISPLAY
1. Plug the power supply cord into wall outlet.	88:88
2. Press [Timer/Clock] pad twice.	☼ ☼
3. Enter time of day (TOD) by pressing appropriate [10min] , [1min] , [10sec] , pads.	11 ☼ ☼ 25
4. Press [Timer/Clock] pad. TOD has now been resistered into the digital programmer circuit and will count up by minutes.	11 : 25

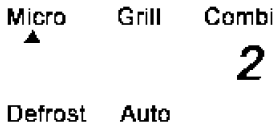
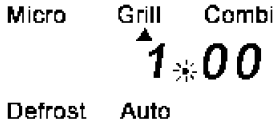
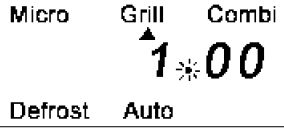
3.2. Chaos defrost

OPERATION	SCROLL DISPLAY
1. Press [Chaos Defrost] Pad once to select Bread.	Micro Grill Combi 1 ▼Defrost ▼Auto
2. Set the weight for 100g by pressing [ ] pad.	Micro Grill Combi 1 00 ▼Defrost ▼Auto
3. Press [Start] pad.	Micro Grill Combi ☼50 ▼Defrost ▼Auto
4. Press [Stop/Reset] Pad twice.Oven shuts off.	Time of day or colon if set appears in the display.

3.3. Auto cook

OPERATION	SCROLL DISPLAY
1. Press [Micro Cook] pad once to select Chilled Meal.	
2. Press [ ] pad to set the weight for 300g.	
3. Press [Start] pad.	
When cooking time has elapsed, Oven beeps 5 times and shuts off.	Time of day or colon if set appears in the display.

3.4. Grill

OPERATION	SCROLL DISPLAY
1. Press [Grill] pad twice.	
2. Set for 1 minute.	
3. Press [Start] pad.	
When 2nd stage cooking time has elapsed, Oven beeps 5 times and shuts off.	Time of day or colon if set appears in the display.

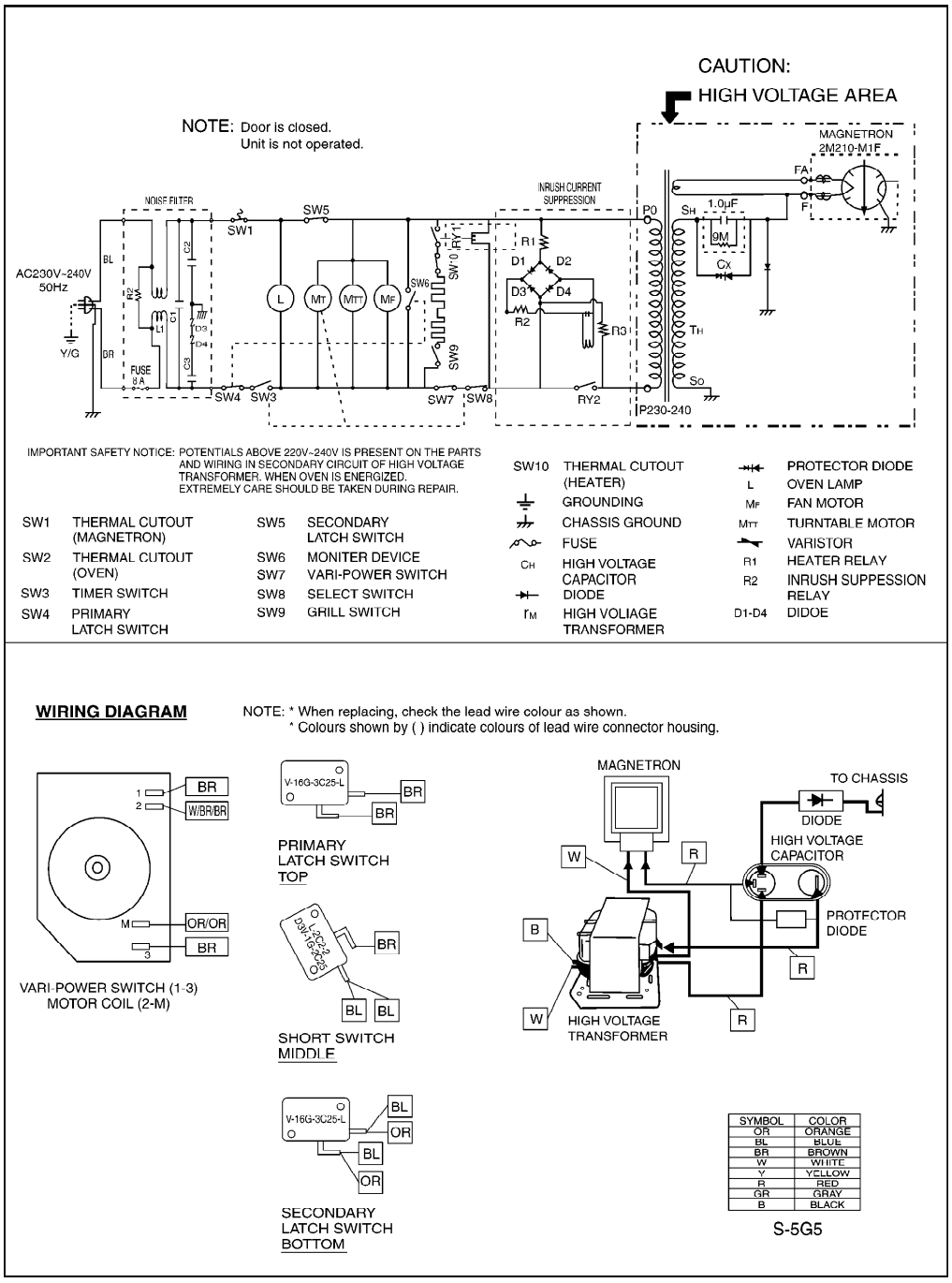
3.5. To set child satety lock

OPERATION	SCROLL DISPLAY
1. Press [Start] pad 3 times continuously. "Child" appears in the display.	Child

3.6. To reset child lock

OPERATION	SCROLL DISPLAY
1. Press [Stop / Reset] pad 3 times continuously.	Time of day or colon if set appears in the display.

4. SCHEMATIC DIAGRAM (NN-K102WF)



IMPORTANT SAFETY NOTICE: POTENTIALS ABOVE 220V~240V IS PRESENT ON THE PARTS AND WIRING IN SECONDARY CIRCUIT OF HIGH VOLTAGE TRANSFORMER. WHEN OVEN IS ENERGIZED. EXTREMELY CARE SHOULD BE TAKEN DURING REPAIR.

SW1	THERMAL CUTOUT (MAGNETRON)	SW5	SECONDARY LATCH SWITCH	SW10	THERMAL CUTOUT (HEATER)		PROTECTOR DIODE
SW2	THERMAL CUTOUT (OVEN)	SW6	MONITER DEVICE		GROUNDING	L	OVEN LAMP
SW3	TIMER SWITCH	SW7	VARI-POWER SWITCH		CHASSIS GROUND	MF	FAN MOTOR
SW4	PRIMARY LATCH SWITCH	SW8	SELECT SWITCH		FUSE	MTT	TURNTABLE MOTOR
		SW9	GRILL SWITCH	CH	HIGH VOLTAGE CAPACITOR		VARISTOR
					DIODE	R1	HEATER RELAY
				TM	HIGH VOLIAGE TRANSFORMER	R2	INRUSH SUPPESSION RELAY
						D1-D4	DIDOE

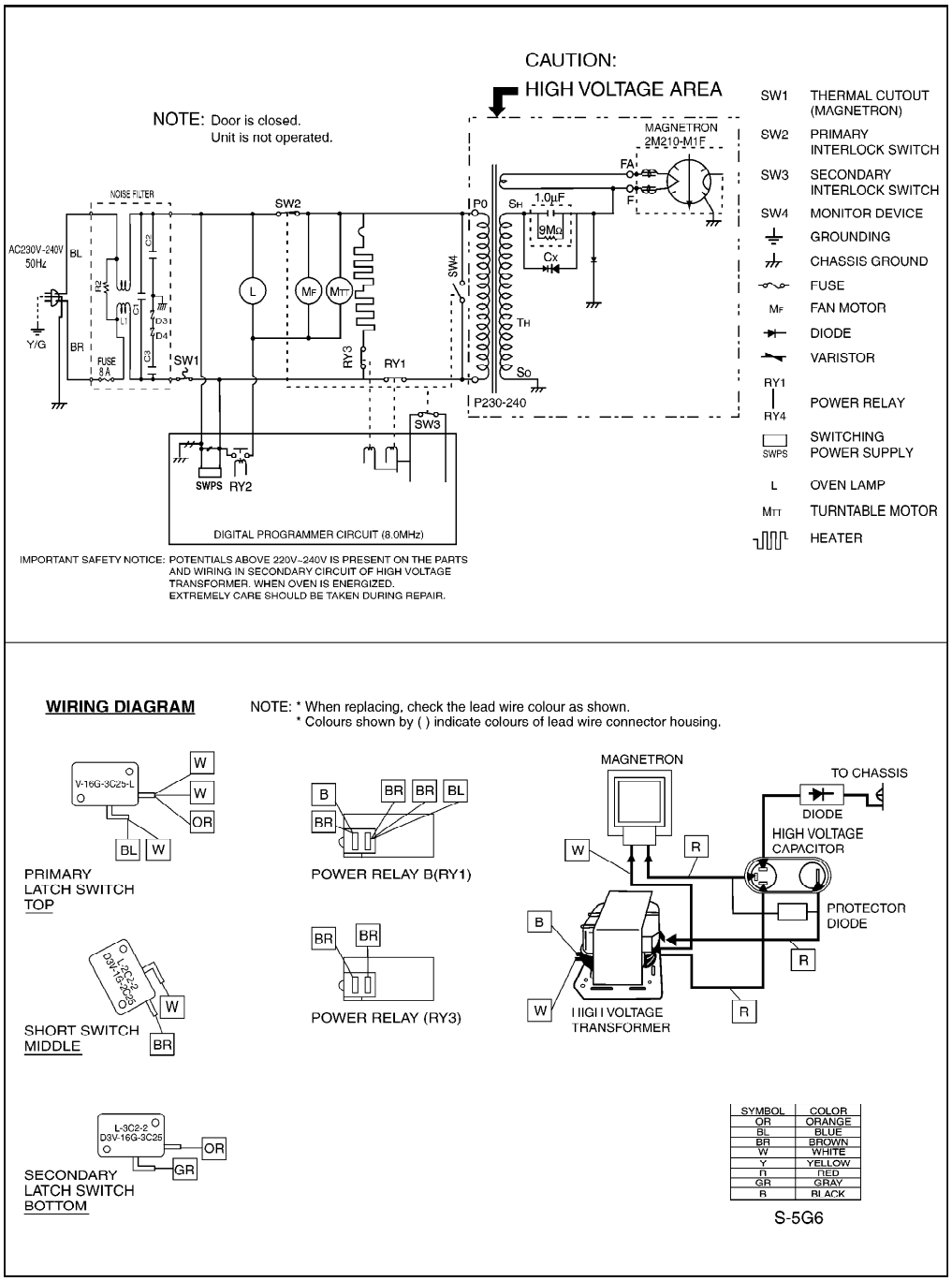
WIRING DIAGRAM

NOTE: * When replacing, check the lead wire colour as shown.
* Colours shown by ( ) indicate colours of lead wire connector housing.

SYMBOL	COLOR
OR	ORANGE
BL	BLUE
BR	BROWN
W	WHITE
Y	YELLOW
R	RED
GR	GRAY
B	BLACK

S-5G5

5. SCHEMATIC DIAGRAM (NN-K152WF)



6. DESCRIPTION OF OPERATING SEQUENCE

6.1. Variable power cooking control (NN-K152WF)

The coil of power relay B (RY1) is energized intermittently by the digital programmer circuit, when the oven is set at any power selection except for High power position. The digital programmer circuit controls the ON-OFF time of power relay B contacts in order to vary the output power of the microwave oven from ”Low” to “High” power. One complete ON and OFF cycle of power relay B is 22 seconds. The relation between indications on the control panel and the output of the microwave oven is as shown in table.

NOTE:

The ON/OFF time ratio does not correspond with the percentage of microwave power since approximately 2 seconds are required for heating of magnetron filament.

Variable Power Cooking

POWER SETTING	OUTPUT POWER(%) APPROX.	ON-OFF TIME OF POWER RELAY B (RY1)	
		ON(SEC)	OFF(SEC)
HIGH	100%	22	0
MEDIUM-HIGH	70%	17	5
MEDIUM	50%	13	9
MEDIUM-LOW	30%	8	14
LOW	15%	5	17
DEFROST	30%	8	14

6.2. Variable power cooking control (NN-K102WF)

The vari-power controller controls the ON-OFF time of the vari-power switch to vary the output power of the microwave oven from “Low” to “High”. The vari-power controller is a part of the timer assembly. The timer assembly consists of timer motor, timer switch, vari-power switch and the combination of gears, cam and actuater level.
One complete cycle of the vari-power controller is 30 senconds, in which the vari-power switch is turned “ON” or “OFF” by the cam rotation in the 30 ± 2 second period.
By controlling the timing of the vari-power switch “ON” period, the 230 - 240V AC supplied to the high voltage transformer is interrupted intermittently so that the average output power of the microwave oven is varied.
Table shows the timing chart of vari-power switch operation in response to the power setting on the control panel.

NOTE:
The ON/OFF time ratio does not correspond with the percentage of microwave power since approximately 2 seconds are required for heating of magnetron filament.

Variable Power Cooking

POWER SETTING	OUTPUT POWER(%) APPROX.	ON-OFF TIME OF POWER RELAY B (RY1)	
		ON(SEC)	OFF(SEC)
HIGH	100%	30	0
MEDIUM-HIGH	70%	23.5	6.5
MEDIUM	55%	16.5	13.5
MEDIUM-LOW	30%	9.0	21.0
LOW	10%	5	25
DEFROST	30%	9.0	21.0

6.3. Turbo defrost, Auto reheat, Auto cook control

When those Auto Control feature is selected and the Start Pad is tapped:

1. **The digital programmer circuit determines the power level and cooking time to complete cooking and indicates the operating state in the display window. / Table shows the corresponding cooking times for respective serving or weight by categories.**
2. **When cooking time in the display window has elapsed, the oven turns off automatically by a control signal from the digital programmer circuit.**

Chaos Defrost (Meat Items)

WEIGHT SELECTED	COOKING TIME
200g	3 min.30 sec.

Auto Cook

CATEGORY	WEIGHT SELECTED	COOKING TIME
Fresh Vegetables	100g	2 min.30 sec.

7. CAUTIONS TO BE OBSERVED WHEN TROUBLESHOOTING

Unlike many other appliances, the microwave oven is high-voltage, high-current equipment. Though it is free from danger in ordinary use, extreme care should be taken during repair.

CAUTION
Servicemen should remove their watches whenever working close to or replacing the magnetron.

7.1. Check the grounding

Do not operate on a 2-wire extension cord. The microwave oven is designed to be used when grounded. It is imperative, therefore, to make sure it is grounded properly before beginning repair work.

7.2. Warning about the electric charge in the high voltage capacitor

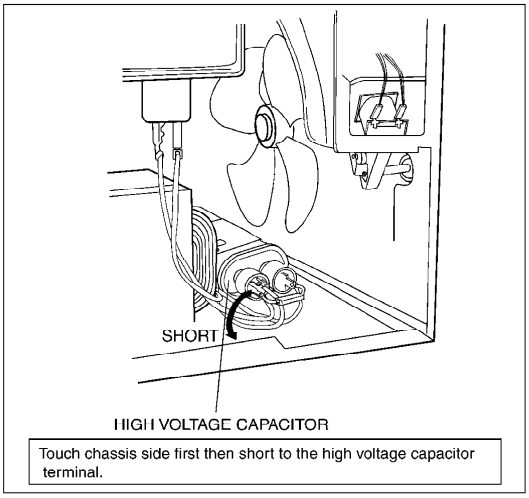
For about 30 seconds after the oven is turned off, an electric charge remains in the high voltage capacitor.When replacing or checking parts, remove the power plug from the outlet and short the terminal of the high voltage capacitor (terminal of lead wire from diode) to chassis ground with an insulated handle screwdriver to discharge.

WARNING

There is high-voltage present, with high-current capabilities in the circuits of the high voltage winding and filament winding of the high voltage transformer. It is extremely dangerous to work on or near these circuits with oven energized. / DO NOT measure the voltage in the high voltage circuit including filament voltage of magnetron.

WARNING

Never touch any circuit wiring with your hand nor with an insulated tool during operation.



Touch chassis side first then short to the high voltage capacitor terminal.

7.3. When parts must be replaced, remove the power plug from the outlet.

7.4. When the 8 Amp fuse is blown due to the operation of short switch:

WARNING

When the 8 Amp fuse is blown due to the operation of short switch, you must replace Primary latch switch and short switch. Also replace power relay B (RY1) when the continulty check reads shorted contacts(1-2).

1. **This is mandatory. Refer to “Adjustments and Measurement” for these switches.**
2. **When replacing the fuse, confirm that it has the appropriate rating for these models.**

3. When replacing faulty switches, be sure mounting tabs are not bent, broken or otherwise deficient in their ability to hold the switches.

7.5. Avoid inserting nails, wire, etc. through any holes in the unit during operation.

Never insert a wire, nail or any other metal object through the lamp holes on the cavity or any other holes or gaps, because such objects may work as an antenna and cause microwave leakage.

7.6. Confirm after repair

1. After repair or replacement of parts, make sure that the screws of the oven, etc. are neither loose nor missing. / Microwaves might leak if screws are not properly tightened.
2. Make sure that all electrical connections are tight before inserting the plug into the wall outlet.
3. Check for microwave energy leakage.

CAUTION / MICROWAVE RADIATION
DO NOT BECOME EXPOSED TO RADIATION FROM THE MICROWAVE GENERATOR OR OTHER PARTS CONDUCTING MICROWAVE ENERGY.

IMPORTANT NOTICE
1.The following components have potentials above 2000V while the appliance is operated. * Magnetron * High voltage transformer * High voltage diode * High voltage capacitor Pay special attention on these portions. 2.When the appliance is operated with the door hinge or magnetron fixed incorrectly, the microwave leakage can reach more than 5mW/cm2. After repair or exchange, it is very important to check if magnetron and the door hinge is correctly fixed.

7.7. Sharp edges

CAUTION

Please use caution when unpacking, installing or moving the unit, as some exposed edges may be sharp to touch and cause injury if not handled with care.

8. DISASSEMBLY AND PARTS REPLACEMENT PROCEDURE

8.1. Magnetron

1. Discharge the high voltage capacitor.
2. Remove 2 screws holding magnetron thermal cutout.
3. Remove 1 screw holding air guide A.
4. Disconnect 2 high voltage lead wires from magnetron filament terminals.
5. Remove 2 screws holding the magnetron.

NOTE:

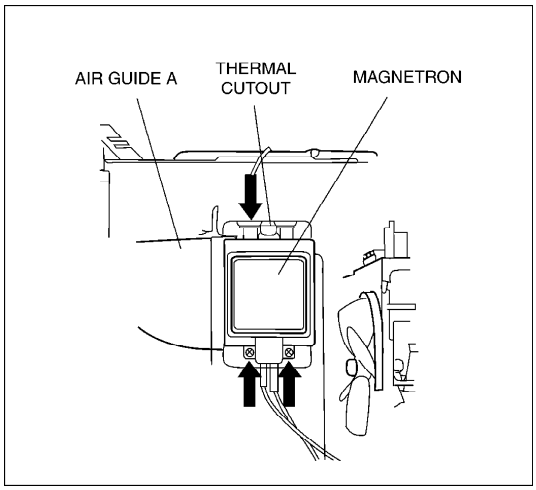
After replacing the magnetron, tighten mounting screws properly making sure there is no gap between the waveguide and the magnetron to prevent microwave leakage.

CAUTION

When replacing the magnetron, be sure the antenna gasket is in place.

CAUTION

When connecting 2 filament lead wires to the magnetron terminals, be sure to connect the lead wires in the correct position. The lead wire of high voltage transformer should be connected to “F terminal” and the lead wire from high voltage capacitor should be connected to “FA terminal”.



8.2. Digital programmer circuit (DPC) and membrane key board.

NOTE:

Before handing the DPC ensure that your body is connected to ground to discharge any electric charge.

1. **Disconnect all connectors from D.P.C.**
2. **Remove 1 screw holding escutcheon base and slide the escutcheon base upward slightly.**
3. **Remove 1 screws holding DPC.**
4. **Separate D.P.C board from tabs on the escutcheon base and remove D.P.C board.**
5. **Remove rubber connector.**
6. **Separate display holder from tabs on the escutcheon base and remove display holder.**
7. **Remove display.**

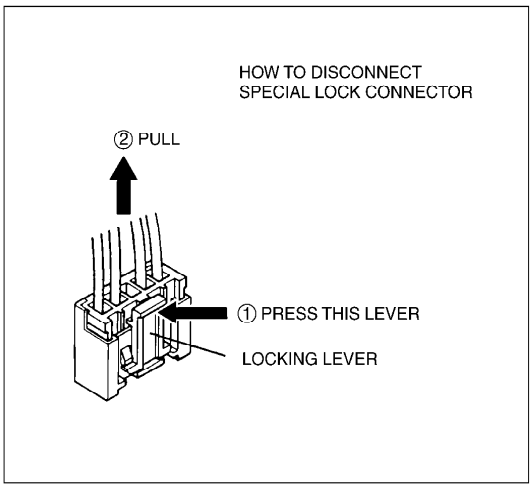
To replace membrane key board

8. **Push the upper part of key board (display window portion) from back of escutcheon base and peel off escutcheon sheet and membrane key board completely from escutcheon base.**

NOTE:

1. The membrane key board is attached to the escutcheon base with double faced adhesive tape. Therefore, applying hot air such as using a hair dryer is recommended for smoother removal. / 2. When installing new membrane key board, make sure that the surface of escutcheon base is cleaned sufficiently so that any

problems (shorted contacts or uneven surface) can be avoided. / 3. Alignment position of membrane key board is as follows; / Membrane key board: Right and upper edges / Escutcheon sheet: Right and upper edges



8.3. Low voltage transformer and/or power relays (RY1, RY2)

NOTE:

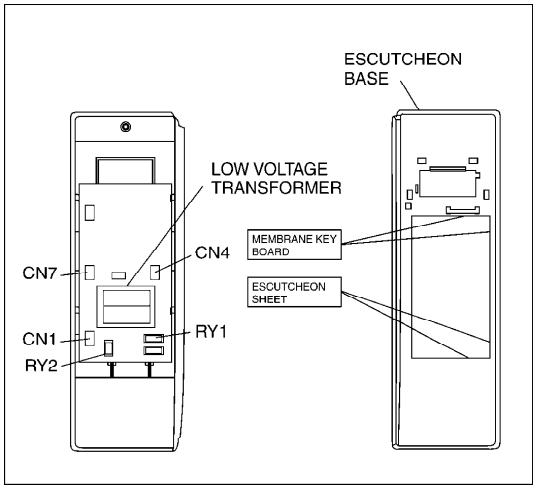
Be sure to ground any static electric charge built up on your body before handling the DPC.

(A) Using solder wick or a desoldering tool and 30W soldering iron, carefully remove all solder from the terminal pins of the low voltage transformer and/or power relays.

NOTE:

Do not use a soldering iron or desoldering tool of more than 30 watts on DPC contacts.

(B) With all the terminal pins cleaned and separated from DPC contacts, remove the defective transformer/power relays making sure all terminal pins are inserted completely. Resolder all terminal contacts carefully.

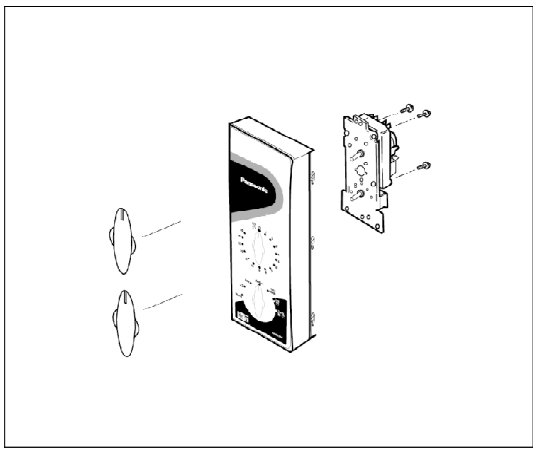


8.4. Timer

1. Disconnect all lead wires from timer.
2. Remove a screw holding escutcheon base and slide the escutcheon base upward slightly.
3. Remove 3 screws to remove timer.
4. Remove two knobs from timer shaft.

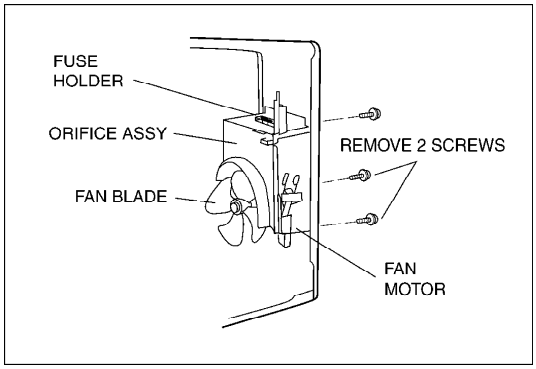
NOTE:

Knobs can not be removed from front. Do not try to remove knobs with fully assembled oven.



8.5. Fan motor

1. Disconnect 2 lead wires from fan motor terminals.
2. Remove 2 screws holding fan motor and orifice assy and detach the fan motor from oven assy.
3. Remove fan blade from the motor shaft by pulling it straight out.



8.6. Door assembly

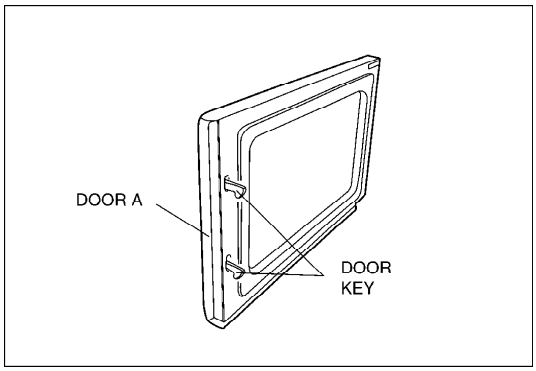
1. Remove door C from door E by carefully pulling outward starting from upper right hand corner using a flat blade screwdriver.
2. Separate door E from tabs on door A and remove door A.
3. Remove door screen B from door A.
4. Remove door key and door key spring.
5. Open Door E at the opening angle of approximately 10°(Note: The door cannot be removed if the opening angle is greater than 10°).
6. Remove the door E from its hinges by pushing the door E upward and out.
7. Replace other components.

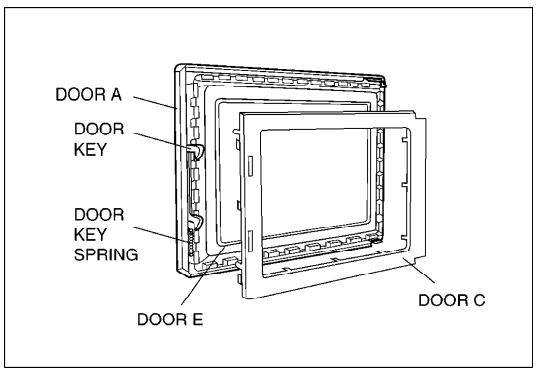
NOTE:

Door alignment is crucial. If door is misaligned, apply pressure until alignment is achieved.

NOTE:

After replacement of the defective component parts of the door, reassemble, install, and perform microwave leakage test.





8.7. Turntable motor

1. Remove the motor cover by breaking off at the 4 spots indicated

by the arrows with a cutter.

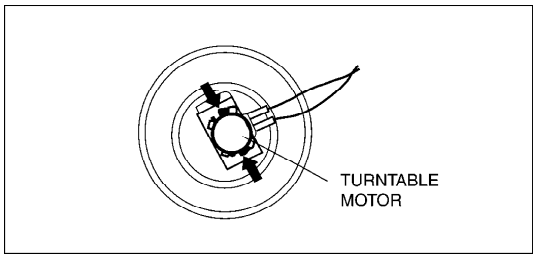
NOTE:

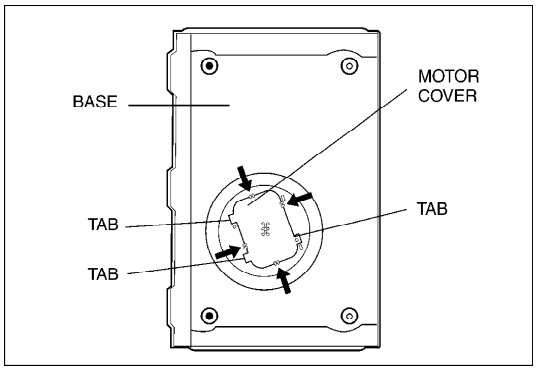
After breaking off the motor cover, make sure that cut-off portions are properly trimmed off or bent to inside so that no sharp edges will be exposed to the outside.

2. Disconnect 2 lead wires connected to the turntable motor.
3. Remove the turntable motor by removing 2 screw.

NOTE:

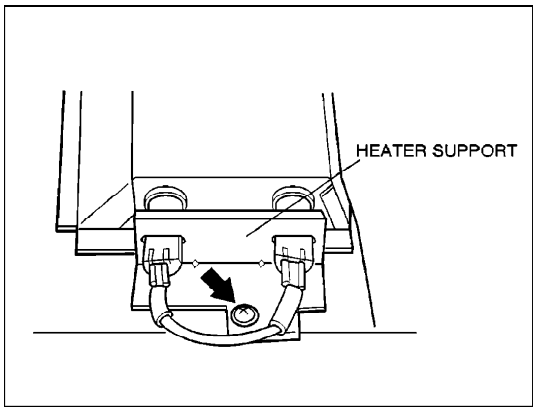
After reinstalling the new turntable motor and reconnecting the 2 lead wires, reinstall the motor cover by rotating it around 180°, tucking the 2 tabs under the base into the 2 provided slots, then screw the single tab to the base using a screw.

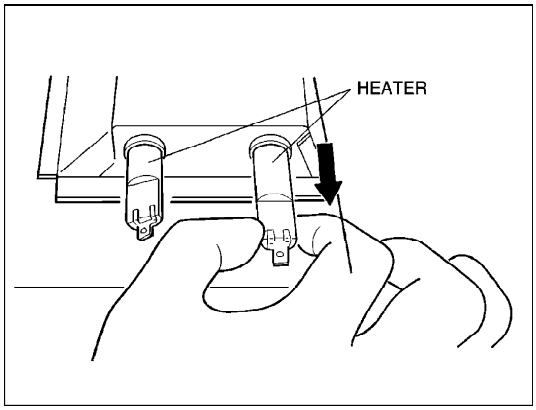




8.8. Quartz heater

1. Disconnect lead wires from heater terminals.
2. Remove 1 screw holding heater supports.
3. Remove the heater by pulling it out.





9. COMPONENT TEST PROCEDURE

CAUTION

1. High voltage is present at the high voltage terminal of the high voltage transformer during any cook cycle.

2. It is neither necessary nor advisable to attempt measurement of the high voltage.

3. Before touching any oven components, or wiring, always unplug the oven from its power source and discharge the high voltage capacitor.

9.1. Primary latch switch, secondary (secondary latch switch and power relay B) interlocks.

1. **Unplug the lead connectors to Power Relay B and verify continuity of the power relay B 1-2 terminals.**
2. **Unplug lead connectors to primary Latch switch and Secondary Latch Switch.**
3. **Test the continuity of switches at door opened and closed positions with ohm meter (low scale). / Normal continuity readings**

should be as follows.

	Door Opened	Door Closed
Primary Latch Switch	∞ Ω (open)	0 Ω (close)
Secondary Latch Switch	∞ Ω (open)	0 Ω (close)
Power Relay B	∞ Ω (open)	∞ Ω (open)

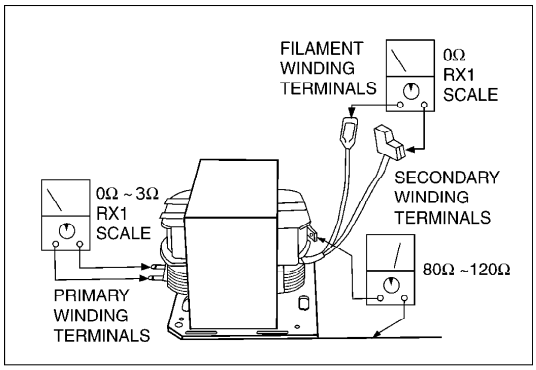
9.2. Short switch & monitor

1. **Unplug lead wires from H.V.transformer primary terminals.**
2. **Connect test probes of ohm meter to the disconnected leads of the H.V. Transformer.**
3. **Test the continuity of short switch with door opened and closed positions using lowest scale of the ohm meter. / Normal continuity readings should be as follows.**

Door Opened	Door Closed
0 Ω	∞ Ω

9.3. High voltage transformer

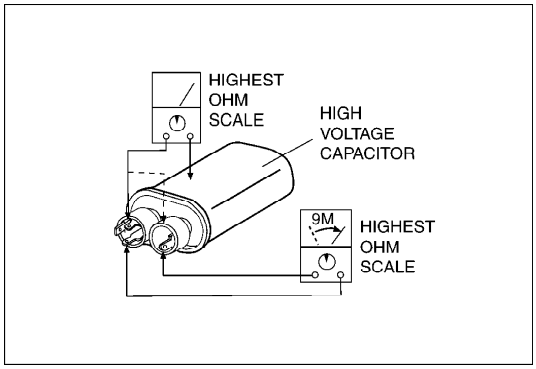
1. **Remove connectors from the transformer terminals and check continuity.**
2. **Normal (cold) resistance readings should be as follows: / Secondary winding..... Approx. 80 Ω ~120 Ω / Filament winding..... Approx. 0 Ω / Primary winding..... Approx. 0 Ω ~3 Ω**



9.4. High voltage capacitor

1. **Check continuity of capacitor with meter on highest OHM scale.**
2. **A normal capacitor will show continuity for a short time, and then indicate 9M Ω once the capacitor is charged.**
3. **A shorted capacitor will show continuous continuity.**

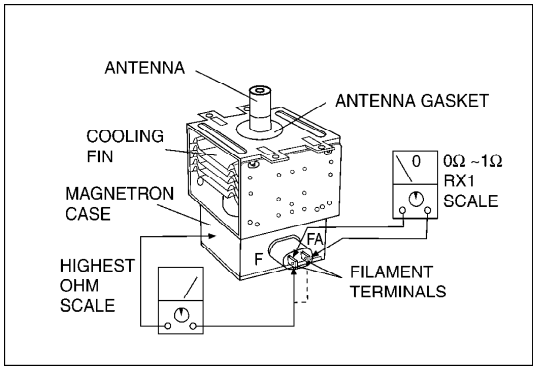
4. **An open capacitor will show constant 9M Ω .**
5. **Resistance between each terminal and chassis should be infinite.**



9.5. Magnetron

Continuity checks can only indicate an open filament or a shorted magnetron. To diagnose for an open filament or shorted magnetron:

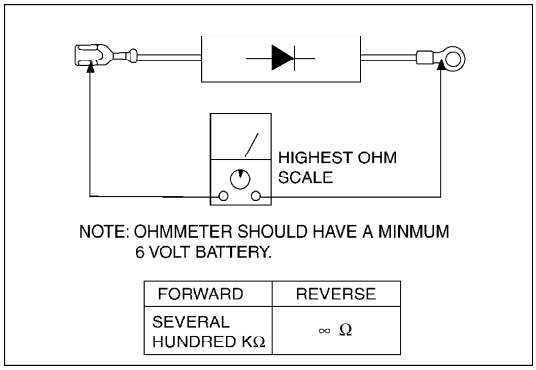
1. **Isolate magnetron from the circuit by disconnecting the leads.**
2. **A continuity check across magnetron filament terminals should indicate one ohm or less.**
3. **A continuity check between each filament terminal and magnetron case should read open.**



9.6. Diode

1. **Isolate the diode from the circuit by disconnecting the leads.**
2. **With the ohmmeter set on the highest resistance scale, measure the resistance across the diode terminals.Reverse the meter leads and again observe the resistance reading.Meter with 6V, 9V or higher voltage batteries should be used to check the front-to-back resistance of the diode, otherwise an infinite resistance may be read in both directions. / A normal diode's resistance will be**

infinite in one direction and several hundred K Ω in the other direction.



9.7. Membrane key board (Membrane switch assembly)

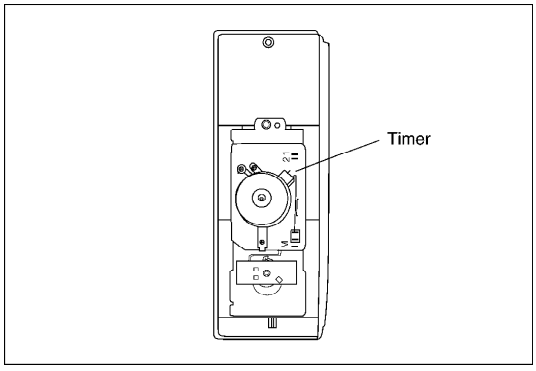
Check continuity between switch terminals, by tapping an appropriate pad on the key board. The contacts assignment of the respective pads on the key board is as shown in digital programmer circuit.

9.8. Variable power controller

- Isolate variable power switch from the circuit by disconnecting 2 leads.

- In order to check if variable power controller is operating normally, follow the test procedures below.

1. **Select any power other than “High” and start the oven.**
2. **Check continuity between both terminals of the variable power switch.**
3. **Variable power controller (timer and variable power switch) is working property it the ohm meter reads open and 0 ohm within 30 ± 2 seconds interval as shown in table on .**



10. MEASUREMENTS AND ADJUSTMENTS

10.1. Adjustment of primary latch switch, secondary latch switch and short switch.

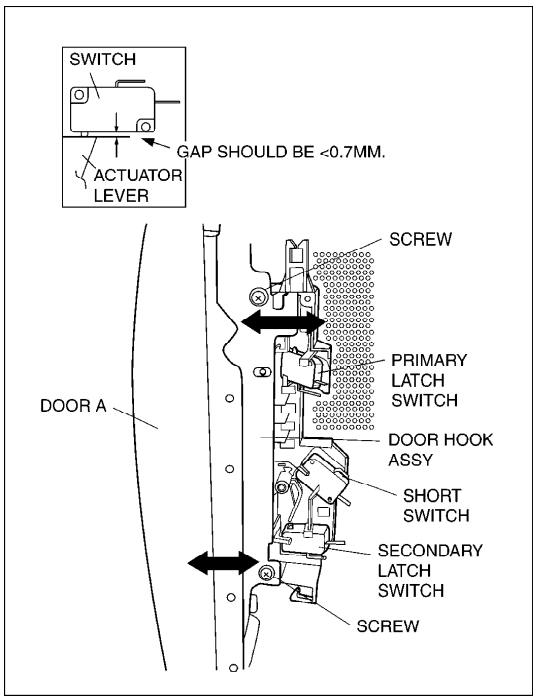
1. **When mounting Primary latch switch,Secondary latch switch and short switch to door hook assembly, mount the Primary latch swith, the Secondary latch switch and the short switch to the door hook assembly as shown in table.**

   NOTE:

   No specific adjustment during installation of Primary latch switch,Secondary latch switch and short switch to the door hook is necessary.

2. **When mounting the door hook assembly to the oven assembly, adjust the door hook assembly by moving it in the direction of arrow in the illustration so that the oven door will not have any play in it. Check for play in the door by pulling the door assembly. Make sure that the latch keys move smoothly after adjustment is completed. Completely tighten the screws holding the door hook assembly to the oven assembly.**

3. **Reconnect the short switch and check the coninuity of the monitor circuit and all latch switches again by following the components test procedures.**



10.2. Measurement of microwave output

The output power of the magnetron can be determined by performing IEC standard test procedures. However, due to the complexity of IEC test procedures, it is recommended to test

the magnetron using the simple method outlined below.
Necessary Equipment:

- **1 liter beaker**
- **Glass thermometer**
- **Wrist watch or stopwatch**

NOTE:

Check the line voltage under load.Low voltage will lower the magnetron output. Take the temperature readings and heating time as accurately as possible.

1. **Fill the beaker with exactly one liter of tap water. Stir the water using the thermometer and record the beaker's temperature. (recorded as T1).**
2. **Place the beaker on the center of glass cook plate. / Set the oven for High power and heat it for exactly one minute.**
3. **Stir the water again and read the temperature of the beaker. (recorded as T2).**
4. **The normal temperature rise at High power position for each model is as shown in table.**

TABLE (1L-1min.test)

RATED OUTPUT	TEMPERATURE RISE
800W(IEC705-88)	Min. 8°C

11. TROUBLESHOOTING GUIDE

CAUTION
1. Check grounding before checking for trouble.
2. Be careful of high voltage circuit.
3. Discharge high voltage capacitor.
4. When checking the continuity of the switches or the high voltage transformer,disconnect one le from these parts and then check continuity with the AC plug removed. To do otherwise may result reading or damage to your meter. / When disconnecting a plastic connector from a terminal, you n the plastic connector instead of the lead wire and then disconnect it, otherwise lead wire may be d or the connector cannot be removed.
5. Do not touch any parts of the circuitry on the digital programmer circuit, since static electric dis may damage this control panel. / Always touch yourself to ground while working on this panel to d any static charge in your body.
6. 230V-240V AC is present on the digital programmer circuit (Terminals of power relay's and prim of low voltage transformer). When troubleshooting, be cautious of possible electrical shock hazar

First of all operate the microwave oven following the correct operating procedures in order to

find the exact cause of any trouble.

	SYMPTOM	CAUSE	CORRECTIONS
1.	Oven is dead. Fuse is OK. No display and no operation at all.	1. Open or loose lead wire harness 2. Open thermal cutout (Magnetron) 3. Open low voltage transformer 4. Defective DPC	Check fan motor when thermal cutout is defective.
2.	No display and no operation at all. Fuse is blown.	1. Shorted lead wire harness 2. Defective primary latch switdh (NOTE 1) 3. Defective short switch (NOTE 1) 4. Shorted H.V. Capacitor 5. Shorted H.V. Transformer (NOTE 2)	Check adjustment of primary, secondary latch switch and short switch including door.
		NOTE 1: All of these switches must be replaced at the same time. Check continuity of power relay B (RY1)'s contacts (between 1 and 2) and if it has continuity, replace power relay B (RY-1)'s. NOTE 2: When H.V. Transformer is replaced, check diode and magnetron also.	
3.	Oven does not accept key input(Program)	1. Key input is not insequence 2. Open or loose connection of membrane key pad to DPC (Flat cable) 3. Shorted or open membrane key board 4. Defective DPC	Refer to operation procedure. Refer to DPC troubleshooting.
4.	Oven lamp and fan motor turn on when oven is plugged in with door closed.	1. Misadjustment or loose wiring of secondary latch switch 2. Defective secondary latch switch	Adjust door and latch switches.
5.	Timer starts count down but no microwave oscillation. (No heat while oven lamp and fan motor turn on)	1. Off-alignment of latch switches 2. Open or loose connection of high voltage circuit especially magnetron filament circuit NOTE: Large contact resistance will bring lower magnetron filament voltage and causing magnetron to lower output and/or be intermittent. 3. Defective high voltage component H.V. Transformer H.V. Capacitor H.V. Diode Magnetron 4. Open or loose wiring of power relay B (RY-1) 5. Defective primary latch switch 6. Defective DPC or power relay B (RY-1)	Adjust door and latch switches. Check high voltage component according to component test procedure and replace if it is defective. Refer to DPC troubleshooting
6.	Oven can program but timer does not start countdown.	1. Open or loose wiring of secondary latch switch 2. Off-alignment of secondary latch switch 3. Defective secondary latch switch	Adjust door and latch switches.
7.	Microwave output is low. Oven takes longer time to cook food.	1. Decrease in power source voltage 2. Open or loose wiring of magnetron filament circuit.(Intermittent oscillation) 3. Aging change of magnetron	Consult electrician
8.	Fan motor and oven lamp turns on when door is opened.	1. Shorted primary latch switch.	

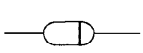
	SYMPTOM	CAUSE	CORRECTIONS
9.	Oven does not operate and return to plugged in mode.	1. Defective DPC	Check property connected on escutcheon base bracket,D.P.C. board. Refer to failure code system.
10.	Loud buzzing noise can be heard.	1. Loose fan and fan motor 2. Loose screws on H.V. Transformer 3. Shorted H.V. Diode	
11.	8A fuse is blown.	1. Shorted lead wire harness 2. Defective short switch 3. Defective primary latch switdh 4. Shorted H.V. Capacitor 5. Shorted H.V. Diode 6. Defective Magnetron 7. Shorted H.V. Transformer 8. Shorted Protector diode 9. Defective power relays 10.Defective DPC	Check adjustment of latch switches and door Replace H.V. Diode and protector diode (*NOTE) Replace Magnetron and protector diode (*NOTE) Replace H.V. Transformer and protector diode (*NOTE)
		NOTE : Be sure to replace protector diode together with those H.V. Components. In this case, only D2 of protector diode may be shorted due to faulty H.V. Component. Therefore, if protector diode is not replaced together, high voltage transformer will be damaged (over heated).	

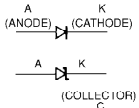
11.1. Digital programmer circuit troubleshooting guide

SYMPTOM	STEP	CHECK	RESULT	CAUSE/CORRECTIONS
No display when oven is first plugged in	1	Fuse pattern of DPC	Normal	→ STEP2
			Open(NOTE)	Shorted circuit of ZNR, L.V.T,Oven Lamp etc. Replace DPC
	2	Low voltage transformer (LVT) secondary voltage	Abnormal 0V	LVT
			Normal	→ Step3
	3	IC-1 pin 16 voltage (Emitter of Q11)	Abnormal	ZD11,Q11
			Normal=5V	Display
NOTE Procedure of fuse pattern repairing is as follows: 1. When the fuse pattern (PF2) opens. (1) Remove jumper wire (PF1). (2) Insert the removed jumper wire (PF1) to "(PF2)"position and solder it. If both "PF1" and "PF2" fuse patterns are open, please replace DPC. 2. When the fuse pattern (PF4) opens. (1) Remove jumper wire (PF3). (2) Insert the removed jumper wire (PF3) to "(PF4)" position and solder it. If both "PF3" and "PF4" fuse patterns are open, please replace DPC. NOTE:*At the time of these repairs, made visual inspection of the varistor for burning damage and examine the transformer with tester for the presence of layer short-circuit (check primary coil resistance). If any abnormal condition is detected, replace the defective parts.				
No key input	1	Membrane switch continuity	Abnormal	Membrane switch
			Normal	IC-1
No beep sound	1	IC-1 pin 29 voltage	Abnormal	IC-1
			Normal	BUZZER, Q210
Power relay A(RY-2) does not turn on even though the program had been set and the start pad is tapped	1	IC-1 pin 9 voltage while operation	Abnormal	IC-1
			Normal=5V	→ Step 2
	2	Short circuit between collector and Emitter of Q223	Still not turn on	RY-2
			RY-2 turns on	Q223
No microwave oscillation at any power setting	1	IC-1 pin 7 voltages while operation at high power	Abnormal	IC-1
			Normal 7----5V	→ Step 2
	2	Q220 transistor	Abnormal	Q220
			Normal	RY 1
Dark or unclear display	1	Replace display and check operation	Normal	DISPLAY
			Abnormal	IC-1
Missing or lighting of unnecessary segment	1	Replace IC-1 and check operation	Normal	IC-1
			Abnormal	DISPLAY

11.2. How to check the semiconductors using an OHM meter

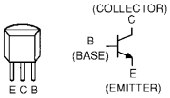
Diode



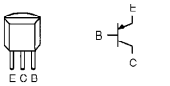


Transistor

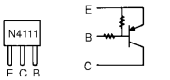
NPN Transistor
2SC
2SD



PNP Transistor
2SA
2SB



Digital Transistor
PNP Transistor



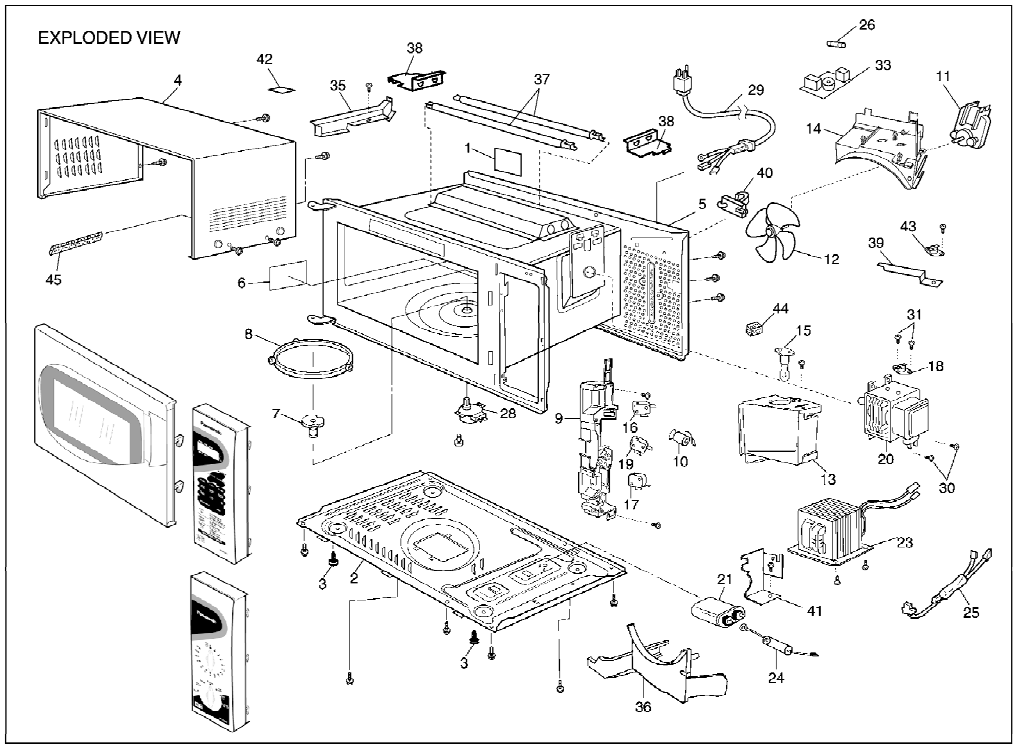
	FORWARD	REVERSE
A-K	SMALL	∞

	FORWARD	REVERSE
B-E	SMALL	∞
B-C	SMALL	∞
C-E	∞	∞

	FORWARD	REVERSE
E-B	SMALL	∞
C-B	SMALL	∞
C-E	∞	∞

	FORWARD	REVERSE
E-B	10kΩ-30kΩ	10kΩ-30kΩ
C-B	50kΩ-90kΩ	∞
C-E	40kΩ-80kΩ	∞

12. EXPLODED VIEW AND PARTS LIST



13. PARTS LIST

NOTE:

1. When ordering replacement part(s), please use part number(s) shown in this part list.
Do not use description of the part.

2. Important safety notice:
Components identified by mark have special characteristics important for safety.
When replacing any of these components, use only manufacture's specified parts.

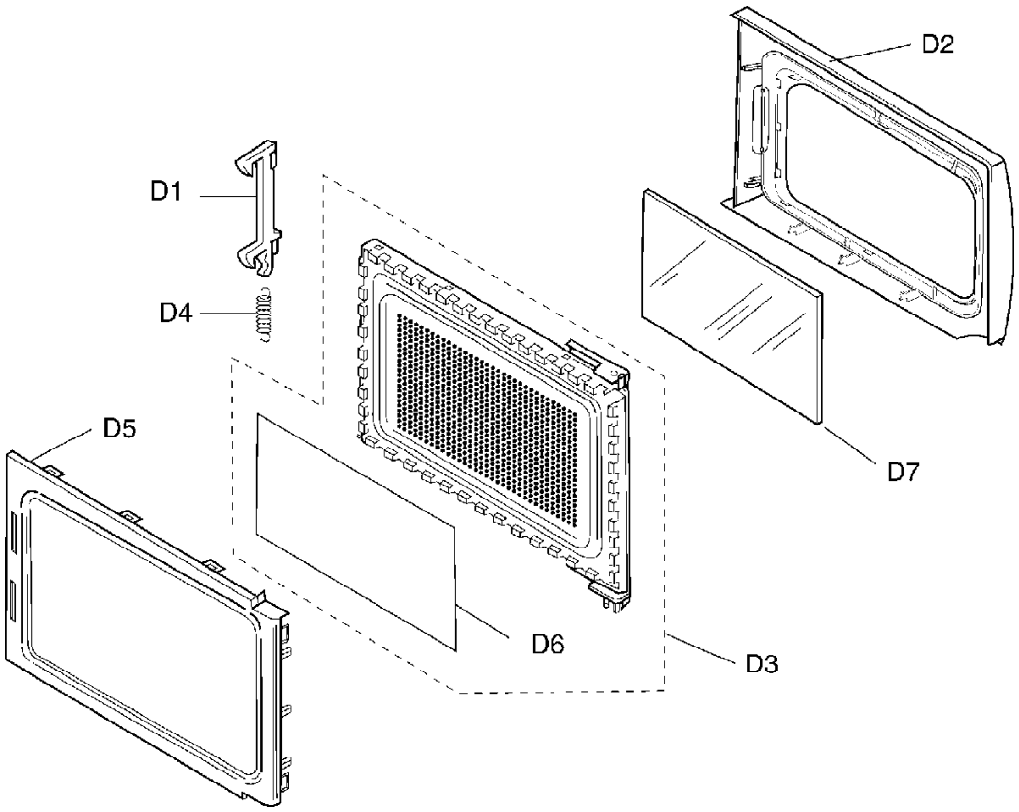
NOTE:

Please order all parts from MELUK in U.K.

Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
1		F00075G60HBP	NAME PLATE	1	K152WF BPQ
1		F00075G60HEP	NAME PLATE	1	K152WF EPG
1		F00075G60HWP	NAME PLATE	1	K152WF WPG
1		F00075G50HBP	NAME PLATE	1	K102WF BPQ
1		F00075G50HEP	NAME PLATE	1	K102WF EPG
2		F10015G50XN	BASE	1	
3		F10084T00AP	RUBBER FOOT	2	
4		F110D5G50HXN	CABINET BODY	1	
5	⚠	F200A5G50XN	OVEN	1	
6		F20555G10XN	COVER	1	
7		F21315G10XN	PULLY SHAFT	1	
8		F290D5G10XN	ROLLER RING (U)	1	
9	⚠	F30205G10XN	DOOR HOOK	1	
10		F31365G10XN	HOOK LEVER A	1	
11		F400A5G10XN	FAN MOTOR	1	
12		F40085G50XN	FAN BLADE	1	
13		F40255G10XN	AIR GUIDE A	1	
14		F41445G40XN	ORIFICE	1	
15		F612E5G10XN	INCANDESCENT LAMP (U)	1	
16	⚠	J61424T00AP	MICRO SWITCH	1	(PRIMARY LATCH SWITCH) (V-16G-3C25-L)
17	⚠	J61424T00AP	MICRO SWITCH	1	K102WF (SECONDARY LATCH SWITCH) (V-16G-3C25-L)
17	⚠	J61414T00AP	MICRO SWITCH	1	K152WF (SECONDARY LATCH SWITCH) (D3V-16G-3C25)
18	⚠	F61455G10XN	THERMAL CUTOUT	1	K102WF
19	⚠	J61784T00AP	MICRO SWITCH	1	(SHORT SWITCH) (D3V-1G-2C25)
20	⚠	2M210-M1G	MAGNETRON	1	
21	⚠	F60905G10XN	H.V.CAPACITOR	1	1.0 μ F
23	⚠	F621B5G10MN	H.V.TRANSFORMER	1	
24	⚠	F62025G10XN	DIODE	1	
25	⚠	F606V5G10XN	PROTECTOR DIODE (U)	1	
26	⚠	ANE6230Z70BP	FUSE	1	8A, 250V
28		F63265G10XN	TURNTABLE MOTOR	1	
29	⚠	F900C5G50BP	AC CORD W/PLUG	1	BPQ
29	⚠	F900C5G40ZP	AC CORD W/PLUG	1	EPG
29	⚠	F900C5G60WP	AC CORD W/PLUG	1	WPG
30		XTWFNE4+12T	SCREW	2	FOR MAGNETRON
31		XTEANE3+6B	SCREW	2	FOR THERMAL CUTOUT
33	⚠	F692Y5G10QP	NOISE FILTER (U)	1	
35		F40268920XN	AIR GUIDE B	1	
36		F40305G50XN	AIR GUIDE D	1	
37		F630G5G50BP	HEATER (AU)	2	120V, 550W
38		F64605G50XN	HEATER MOUNTING PLATE	2	
39		F66265G60XN	THERMAL CUTOUT MOUNTING	1	K152WF
39		F66265G50XN	THERMAL CUTOUT MOUNTING	1	K102WF
40		F11407000AP	STOPPER	1	
41		F66625G50XN	GROUNDING PLATE	1	
42		F01505G50BP	NO TOUCHING LABEL	1	BPQ
42		F01504Y00XN	NO TOUCHING LABEL	1	EPG, WPG

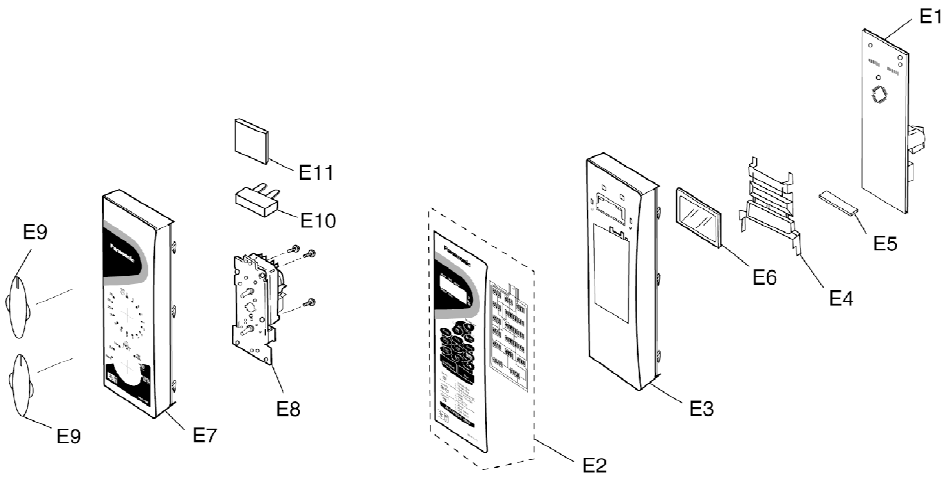
Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
43	⚠	F61455G60XN	THERMAL CUTOUT	1	K152WF
43	⚠	F61455G50XN	THERMAL CUTOUT	1	K102WF
44		F0922000AE	CUSHION RUBBER C	1	
45		F0922000EF	CUSHION RUBBER C	1	

14. DOOR ASSEMBLY



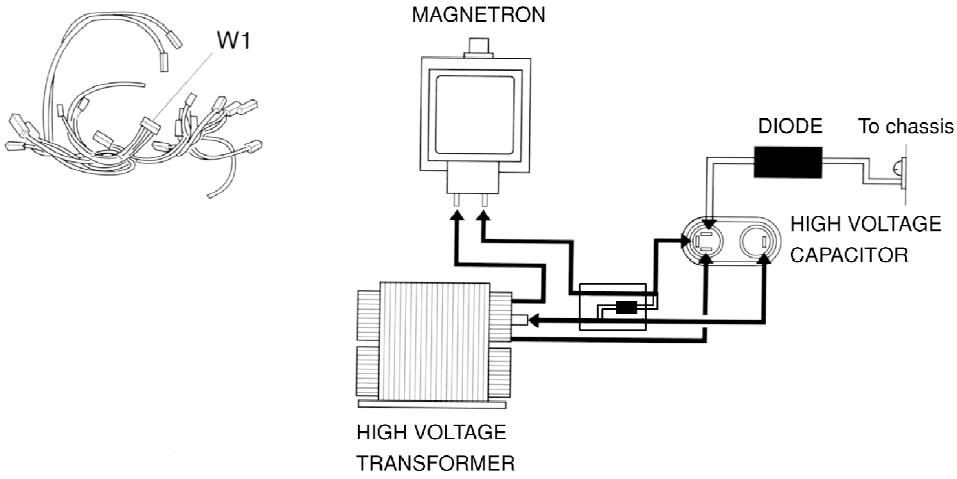
Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
D1		F30185G10XN	DOOR KEY A	1	
D2	⚠	F30015G10HMN	DOOR A	1	
D3	⚠	F302K5G10XN	DOOR E (U)	1	
D4		F30215G10XN	DOOR KEY SPRING	1	
D5	⚠	F30855G10XN	DOOR C	1	
D6	⚠	F31455G10XN	DOOR SCREEN A	1	
D7		F31465G10XN	DOOR SCREEN B	1	

15. ESCUTCHEON BASE ASSEMBLY



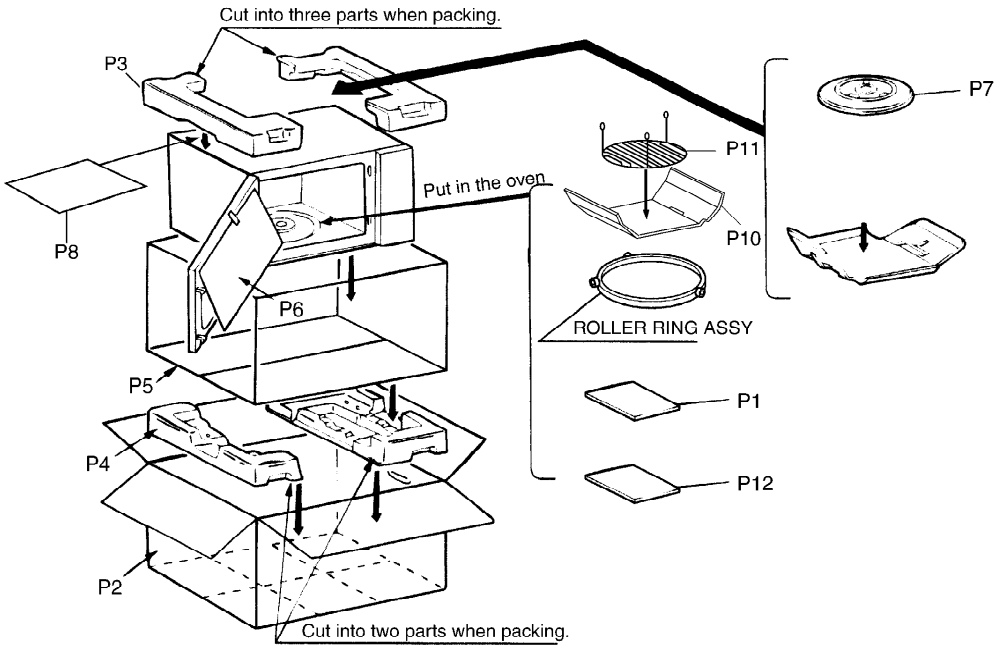
Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
E1		F603L5G60BP	D.P.CIRCUIT	1	K152WF (BPQ)
E1		F603L5G60EP	D.P.CIRCUIT	1	K152WF (EPG, WPG)
E2		F630Y5G60HBP	MEMBRANE SWITCH (U)	1	K152WF (BPQ)
E2		F630Y5G60HEP	MEMBRANE SWITCH (U)	1	K152WF (EPG, WPG)
E3		F80345G40HHN	ESCUTCHEON BASE	1	K152WF
E4		F66174T00AP	DISPLAY TUBE COVER	1	K152WF
E5		A67004T00AP	RUBBER CONNECTOR	1	K152WF
E6		AEDDHJ5G60XN	DISPLAY	1	K152WF
E7		F80345G50HBP	ESCUTCHEON BASE	1	K102WF (BPQ)
E7		F80345G50HEP	ESCUTCHEON BASE	1	K102WF (EPG)
E8		F60015G50XN	TIMER	1	K102WF
E9		F80205G10HMN	TIMER KNOB	2	K102WF
E10		JQX-13FA24D	POWER RELAY	1	K102WF
E11		F603L5G50EP	INRUSH CURRENT SUPPRESSION	1	K102WF

16. WIRING MATERIALS



Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
W1		F030A5G60BP	LEAD WIRE HARNESS	1	K152WF
W1		F030A5G50BP	LEAD WIRE HARNESS	1	K102WF

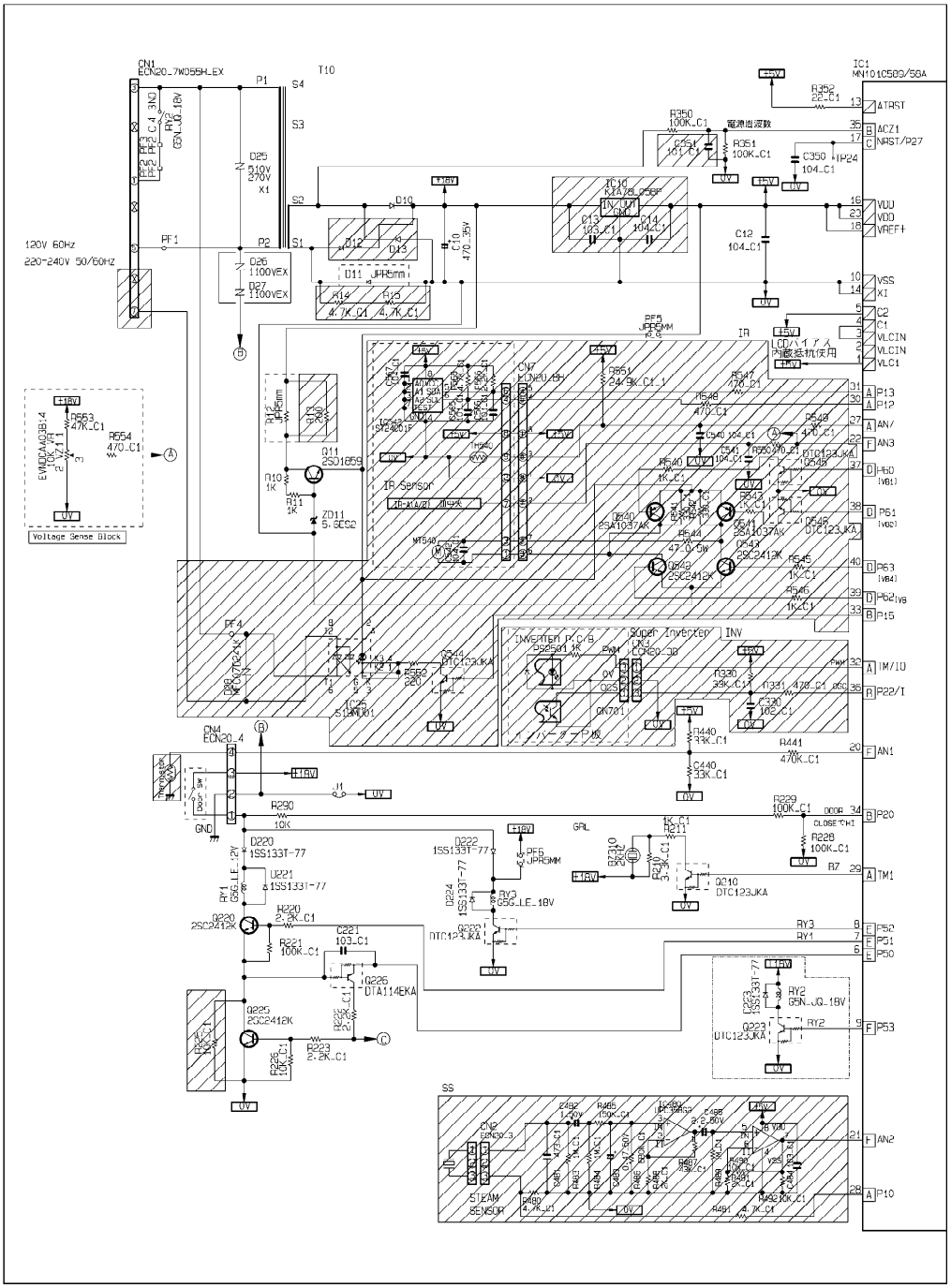
17. PACKING AND ACCESORIES

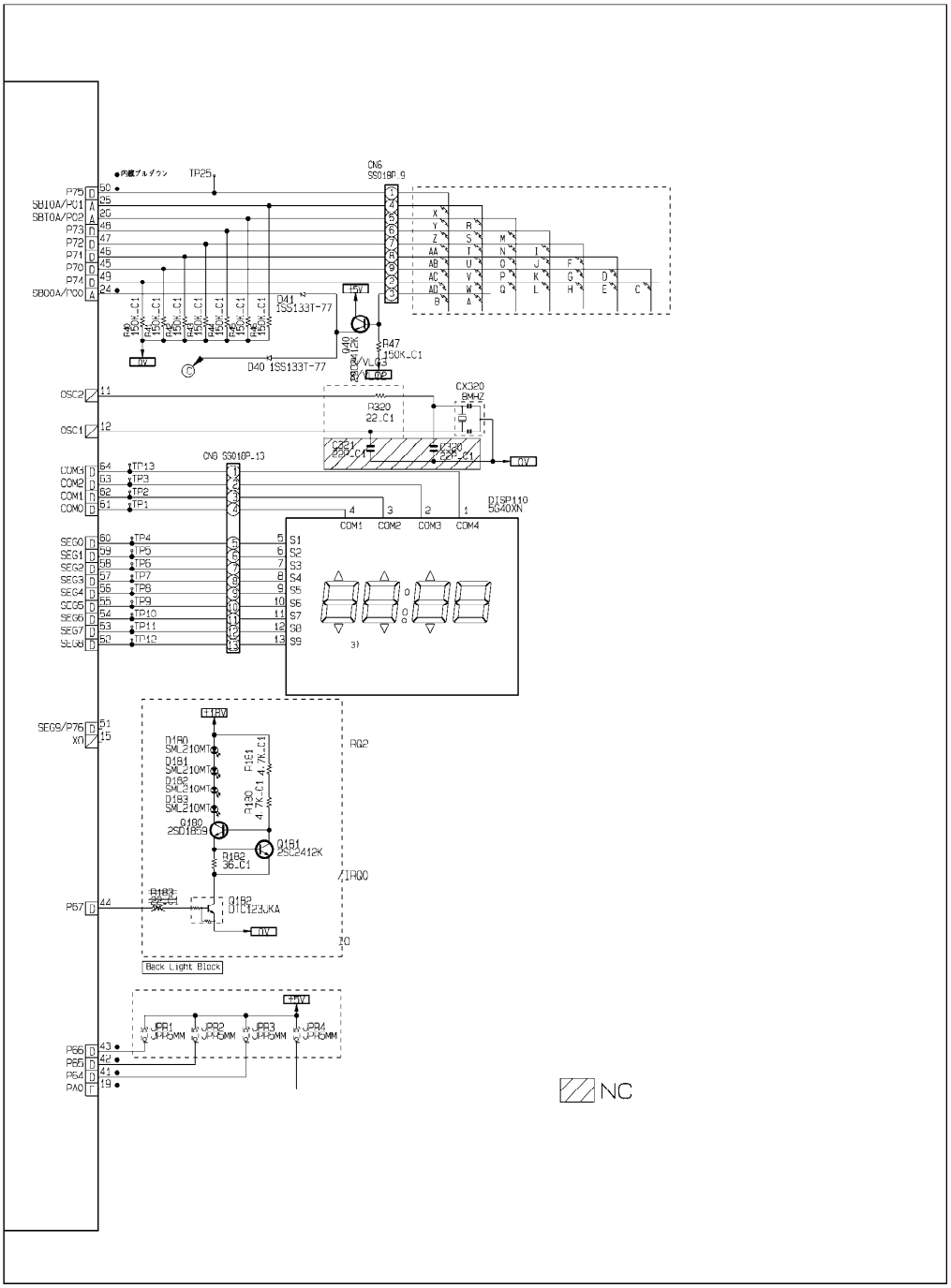


Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
P1		F00035G50BP	INSTRUCTION MANUAL	1	BPQ
P1		F00035G50EP	INSTRUCTION MANUAL	1	EPG
P1		F00035G60WP	INSTRUCTION MANUAL	1	WPG
P2		F01025G60HBP	PACKING CASE, PAPER	1	K152WF (BPQ, EPG)
P2		F01025G60HWP	PACKING CASE, PAPER	1	K152WF (WPG)
P2		F01025G50HBP	PACKING CASE, PAPER	1	K102WF (BPQ, EPG)
P3		F01045G40XN	UPPER FILLER	1	
P4		F01055G40XN	LOWER FILLER	1	
P5		F01068100XN	P.E.BAG	1	
P6		F01075G10XN	DOOR SHEET	1	
P7		A06015G10XN	COOKING TRAY	1	
P8		A01924T00AP	SHEET	1	
P10		F01085G50XN	TRAY PACKING	1	
P11		F060V5G50XN	OVEN RACK	1	
P12		F01695M70BP	SERVICE CENTER LIST	1	

18. DIGITAL PROGRAMMER CIRCUIT (NN-K152WF)

SCHEMATIC DIAGRAM


120V 60Hz
220-240V 50/60Hz
Voltage Sense Block
IR Sensor
INVERTER P.C.B
Super Inverter
STEAM SENSOR



19. DIGITAL PROGRAMMER CIRCUIT

PARTS LIST

Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
BZ310		AEFBTFM571	BUZZER	1	2.0KHz
C10		AECETK1V471B	AL CHEM CAPACITOR	1	470 μ F/35V
C221		AECUU06F103Z	CHIP CAPACITOR	1	0.01 μ F/50V
C12, C350		AECUT06F104Z	CHIP CAPACITOR	2	0.1 μ F/25V
CN1		AEEMXF01505W	CONNECTOR	1	
CN4		F03535G40XN	CONNECTOR	1	4 PIN
CX320		AEFOS800MG06	CERAMIC RESONATOR	1	8.00MHz
D10		AEDNERA1502	DIODE	1	
D40, D41, D220, D221-D224		AESS133T-77	DIODE	7	
D180-D183		AESQSML210M	LED	4	
D25		AERZ511KD10A	VARISTOR	1	
D26, D27		AERZ102KD10A	VARISTOR	2	
IC1		MN101C589DM	L.S.I	1	
Q11, Q180		2SD1859TV2Q	TRANSISTOR	2	
Q40, Q181, Q220, Q225		2SC2412KT146	CHIP TRANSISTOR	4	
Q182, Q210, Q222, Q223		AESC23JKE	CHIP DIGI-TRANSISTOR	4	
Q226		AESA14EKE	CHIP DIGI-TRANSISTOR	1	
R211		AERJ06J102R	CHIP RESISTOR	1	1K Ω, 1/16W, 5%
R226		AERJ06J103R	CHIP RESISTOR	1	10K Ω, 1/16W, 5%
R221, R228, R229, R350, R351		AERJ06J104R	CHIP RESISTOR	5	100K Ω, 1/16W, 5%
R40-R47		AERJ06J154R	CHIP RESISTOR	8	150K Ω, 1/16W, 5%
R320, R352		AERJ06J220R	CHIP RESISTOR	2	22 Ω, 1/16W, 5%
R220, R222, R223		AERJ06J222R	CHIP RESISTOR	3	2.2K Ω, 1/16W, 5%
R210		AERJ06J332R	CHIP RESISTOR	1	3.3K Ω, 1/16W, 5%
R440, C440		AERJ06J333R	CHIP RESISTOR	2	33K Ω, 1/16W, 5%
R182		AERJ06J360R	CHIP RESISTOR	2	36 Ω, 1/16W, 5%
R441		AERJ06J471R	CHIP RESISTOR	1	470 Ω, 1/16W, 5%
R180, R181		AERJ06J472R	CHIP RESISTOR	2	4.7K Ω, 1/16W, 6%
R10, R11		AERDY2TJ102T	CARBON FILM RESISTOR	2	1K Ω, 1/4W, 5%
R290		AERDY2TJ103T	CARBON FILM RESISTOR	1	10K Ω, 1/4W, 5%
RY1, RY3		AEGG5G1A12	POWER RELAY	2	
RY2		AEBJQ1A18	POWER RELAY	1	
T10		AETP4T00QP	LOW VOLTAGE TRANSFORMER	1	
ZD11		AESZMTZJ5R6B	ZENER DIODE	1	

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